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LECTURES
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LECTURE XLIII.

THE SEVENTH PAIR OF NERVES — THEIR DOUBLE ORIGIN AND FUNCTION — THE SYMPATHETIC OR GREAT ORGANIC NERVE — ITS ORIGIN — UNIVERSAL CONNEXION — PRESIDING OVER THE FUNCTIONS OF NUTRITION, SECRETION, &c.

WE are now prepared for the consideration of the seventh pair of nerves, or, as it has been strangely called, the *portio dura* of the seventh, as if it were not essentially distinct from the auditory nerve in origin, structure, course, and function.

Its Double Origin.—There needs only a moment's inspection to convince you that this nerve arises from two distinct roots;—one from the central column of the medulla oblongata or inferior surface of the spinal chord,—and the other from the side of the compressed corpus olivare, or what we should have termed the corpus restiforme or lateral column in the human being. We can plainly trace the superficial course of the inferior portion across the medulla oblongata, and parallel with the pons varolii, and separated from it by a little sulcus; and the nerve or the inferior portion of the nerve is the evident prolongation of this medullary chord. With a little trouble we can dissect away and turn over this inferior portion of the nerve, and then we have other fibres as plainly springing from the side of the medulla oblongata, running parallel with the first, comprised with them in one common sheath, and combining to form the seventh nerve.

Structure of the Nerve.—Minute anatomists have spoken, and with perfect truth, of the difference in the internal structure of different nerves. This is sufficiently plain in the larger nerves. The continuation, as it were, of the pulpy matter of the brain in the nerves of pure sensation—the distinct filaments of the fifth pair—the single furrowed chord of the cerebro-visceral, are well known; so in this seventh pair, and chiefly in the inferior portion of it, the chords of which it is composed can be traced without the aid of a lens, and also the minute filaments running from one to another, and giving to the whole a plexus-like appearance. This is a division of minute anatomy which has been hitherto neglected. Considering the greater development of the nerves, both animal and organic, in our patients, we have superior opportunities for inquiring intoit; and, when we have a little emerged from that obscurity or disrepute under which the students of veterinary medicine have hitherto laboured, the possible connexion between the structure and the function of the nerves, may be one subject, and far from being the most important one that may be entrusted to our research; and, if it should hereafter appear that our practice is based on anatomical facts, and strict physiological deductions, and close observance of their bearing on disease, the pathology of domesticated animals will be acknowledged to be one of the most useful auxiliaries in the study of human medicine.

The Course of the Seventh Nerve.—This nerve emerges from the skull through the meatus auditorius internus, inclosed in the same sheath with the eighth pair (the portio mollis or auditory nerve). The eighth soon runs its course, as already described; but the seventh, when passing through the spiral canal in the temporal bone, and at the bottom of the meatus, gives off two important branches somewhat differing from those described by human anatomists. The first answers nearly to the *chorda tympani* or nerve of the tympanum, for it passes across that cavity, and along the handle of the malleus, or rather, between it and the incus; it then escapes from the tympanum through a small foramen appropriated to this purpose, descends towards the tongue, and

unites with the lingual nerve. The other branch also passes through the extremity of the tympanum—it follows the direction of the eustachian tube—anastomoses with the vidian nerve of the fifth pair, traverses the suboccipital ganglion, and, deeply seated beneath the temporal bone after its escape through a foramen in the sphenoid bone, it distributes its ramifications over the neighbouring parts.

The main trunk of the nerve, passing from the spiral canal, is found behind the condyle of the lower jaw; and there it first assumes the character of a kind of gangliform plexus, and ramifies into various branches. Three go to the different parts of the ear,—the *anterior* branch supplies the muscles of the anterior part of the ear, constitutes another plexus before and at the base of the scutiform cartilage, anastomoses with the lacrymal branch of the ophthalmic nerve, and loses itself in the neighbouring integument and muscles;—the *posterior* auricular goes to the back of the ear, and supplies the muscles and integument there; while the *internal* auricular enters the conch, and ramifies over it. There are various parotideal branches which lose themselves in the upper part of the parotid gland, and the integument over it. And now, the main trunk of the eighth nerve, joined by a branch from the posterior maxillary nerve, emerges from the parotid gland, turns round the cervix of the jaw, and appears upon the outside of the temporal artery. This is the place where it has usually been divided for experiments on it as the motor nerve of the face. The beating of the artery will always guide you to it. It now becomes the proper facial nerve. Its branches reach to every part of the face, from the forehead to the extremity of the muzzle; while some of them, taking a descending as well as posterior course, unite with the cerebro-visceral, the spinal accessory, the great organic, and the first and second cervical nerves.

Difference of Distribution.—There is a considerable difference in the distribution of the facial branches in different animals, and that depending upon the variety of the motions of the lips, or the powerful action of the muscles of the jaw and neck. Observe in the horse the profuse distribution of the nerve about the nostrils and the muzzle, accounting for the beautiful play of the nostril in the blood-horse, and the varied action of his lips and muzzle—the principal seat of the sense of touch in him. Next observe the far fewer branches in the dog, whose lips and the ala of whose nostrils have comparatively little motion, and the plexus of ramifications going to the muscles of the jaw and even of the neck, which are concerned in the various and powerful action of the jaws, and the motions of the head generally, and of the neck. Again, observe the multiplicity of fibrils directed to the ear of the horse, compared with the same part of other animals, illustrating the varied play and the speaking action of the ear in this noble animal.

The Function of the Nerve.—I know that the seventh is the voluntary motor nerve of the face—of that there can be no doubt. The motions of the head—the action of almost every part of the face—the expression of the countenance, depend partly or entirely on the influence of the seventh nerve; and all the muscles of the face, the head, and the external part of the neck, are perfectly under the command of the will. A great many of the muscles of the face, however, are connected with the discharge of the organic functions—voluntarily so far as mastication is concerned—voluntarily in many an occasional act connected with respiration, as coughing, sneezing, sighing, talking; but involuntary and unconsciously in the common process of breathing; and involuntary and violently, yet consciously, in the deep and rapid breathing of exercise or disease.

The double origin of the seventh nerve, from the central inferior, and lateral column of the medulla oblongata, enables me to account for all this with tolerable satisfaction. From the motor column I derive the power of voluntary action; from the lateral column the involuntary action of some of the muscles in the performance of an organic function, and that varying to a considerable degree, according as circumstances may require; and from the union of both, I have the power of exciting those muscles to more energetic and more widely combined action, for the discharge of this function when I please, or under circumstances of difficulty or disease. It is like the combination of the spinal accessory with the nerves of voluntary motion from the spinal chord, and which causes certain muscles of the neck and shoulder to be either subservient to the will, or employed in respiration, or both, as circumstances may demand; but the two roots, or sources of nervous influence, are here brought nearer together. I acknowledge, Gentlemen, that this is somewhat a new view of the character and function of the seventh nerve. The double origin you will not deny; the function of the nerves, from the inferior central and from the lateral column, seems to be tolerably well established; and it will be for you to inquire what better explanation you can give of the office of a nerve springing from both these columns.

The Upper Cervical Ganglion.—At the base of the cranium, beneath, and in front of the atlas, we find a pyriform reddish

body, of a somewhat soft consistence, and differing in bulk in various animals. It gradually contracts as it proceeds down the neck, and at length terminates in a chord or nerve. In the horse it is scarcely an inch in length before it has diminished to a mere chord—in the human being it is said to extend from the skull to the transverse process of the third vertebra. Before it takes on the character of a chord or nerve, it either sends numerous filaments to neighbouring and even distant parts, or it receives them, or both, and particularly as it regards the cranial and spinal nerves.

There is a communication with the sixth pair, but not of that important character that some have represented. A branch of the great organic was ramifying, or forming a nervous plexus over the carotid artery within the cavernous sinus—the sixth nerve passes over the artery at the same place,—the two nerves come in contact with each other—they exchange several fibres, and then both of them continue their course. Professor Mayo has given a very satisfactory representation of this in his outlines of human physiology. There are two communications with the fifth pair, and of the same character, and accompanied by an exchange of fibres;—one through the medium of the suboccipital ganglion, and the other within the foramen lacerum.

It is the Head or Source of the Nerve.—I cannot then bring myself to believe that it springs from the fifth and sixth pairs, or that it is a collection of branches from them, and, by-and-by, from almost every nerve of the frame. A minute dissection of these communications will prove, that there was a nerve previously existing with which the others anastomose, and that it is not one nerve giving origin to the other, but a fair interchange of fibrils and of influence for some important purpose. Both the fifth and the sixth nerves receive as much as they give. I am therefore disposed to regard this ganglion as the commencement of the great organic nerve. I feel a difficulty about it. Ganglions are generally found in the course of nerves, and do not form their head or source. This is a unique instance of a ganglion constituting the origin, although perhaps we have something like it in the origins of the organic motor nerves from that rounded, ganglion-shaped portion of medullary matter the corpus olivare. There needs some master mind to give us a comprehensive and satisfactory view of this portion of the organic system. It would be worthy of that great physiologist to whom we already owe so much, and a noble completion of his labours.

The Course and Ramifications of the Great Organic Nerve.—I will then suppose that this ganglion is the head or commencement of the great organic nerve. There are first its ramifications to the suboccipital ganglion, and thence to all its wide connexions; there is the branch which enters the cranium through the foramen lacerum. As it passes through, a filament is given to the cavity of the tympanum, and so to the seventh pair (the portio dura), and also to the cerebro-visceral; and, still climbing up, I have said that it forms a plexus or ganglion or both; it is a firm body, but enveloped with a meshwork of nervous fibrils, a *rete mirabile*, covering the carotid artery, and where it has the communication which I have described with the sixth, and whence proceed several other little filaments to the fifth. We no sooner begin to trace the ganglion, and the nerve in which it terminates, than we are made aware of that which gave it the name of the great sympathetic; it is connecting itself with everything; we can trace it to the laryngeal branch of the spino-cerebral, the glosso-pharyngeus, the spinal accessory, the first and the second cervical. In fact, we shall find that it communicates with every nerve by which it passes, and exchanges fibres with each—it gives fibres to receive them from both roots, but chiefly the motor root.

This Nerve given especially to the Arteries.—But now appears a new feature in nervous ramifications. We have seen anastomoses between different nerves, or branches of the same nerve; we have seen the nerves ramify upon and lose themselves in the substance of muscles; but the fibriculi of this nerve are principally distributed over the arteries. We see it here beautifully. When they reach the arteries, they form plexuses, net-works, and, combining with some interposed cellular substance, perfect nervous tunics around the vessels. The substance of the nerve is pulpy—its neurilema or sheath is delicate—there is a kind of transparency about it, and therefore although these nerves are visible enough on the larger vessels, and can be traced even on the smaller, we at length lose them, not because they cease to exist, but because, from their peculiar structure, we are no longer able to follow them. We have hitherto had nerves spreading over certain membranes, and devoted to peculiar sensation; or ramifying over the locomotive portion of the frame generally, and connected with common sensation; or over muscles, and connected with motion, voluntary or involuntary: but here is a nerve identifying itself indeed with every other, but peculiarly *the nerve of the bloodvessels*, covering them as with a tunic, and connected in some mysterious way with their action. This is a singular circumstance, and to which I shall recall your attention by-and-by.

Connected with all the main Arteries.—It is found at its commencement, thus encircling the internal carotid, and can be traced, for a certain distance, on all its branches. It covers in the same manner the beginning of the external carotid, and can be followed over the main arteries of the neck, and the face, and the glands.

Course down the Neck.—The ganglion grows smaller, and ends in a nervous chord. *The great organic* I have ventured to call it, and the reason for which will presently be more apparent. It now unites itself with the cerebro-visceral, and passes down the neck in the same sheath with it, and lying between the carotid and the cerebro-visceral, and therefore, for any experiment, clearly distinguishable by this peculiarity of situation, by its being the smaller nerve of the two, and of a redder hue, and a more pulpy substance. As it pursues its course there are frequent anastomoses between these nerves, and also very small filaments from the lower cervical nerves. When we reach the base of the neck, it communicates with the recurrent nerve.

It enters the Thorax.—As it approaches the thorax, and when entering into it, its net-work investing connexion with the arteries becomes again more evident; it may be seen surrounding the vertebral artery, and more particularly the axillary artery, on the trunk of which it cannot be mistaken, and on the branches of which it may be long followed. It begins also to be more evident on the carotids, and forms on them numerous plexuses, interspersed with ganglions, and which seem to be the sources of new radiations; and these run along the great vessels to the heart.

The Posterior Cervical Ganglion.—As it enters the thorax, or under the first dorsal vertebra, this nerve enlarges again, but not to the same degree as at the superior ganglion. Here we briefly trace some important branches—one of considerable size to the seventh (sixth) cervical nerve, not, as our best veterinary anatomist asserts, on account of "the mediate connexion which it thus has with the five anterior cervical nerves," because it has had direct communication with them in its passage down the neck; but because a plexus of spinal nerves is here beginning to be formed for the supply of the fore extremities, and this nerve is called upon to contribute its influence whatever it may be. There are branches to the last cervical—to the first and second dorsals—a plexus about the root of the trachea—fibrils to the œsophagus—more to the recurrent, and, chief of all, the cardiac plexus, given to, and plainly ramifying over, the great vessels of the heart. I have not time to enumerate the ramifications and plexuses which are here formed; they are so numerous and complicated, that no vessel, of the heart or lungs, or even any portion of a vessel, should be without this nervous tunic.

Division within the Thorax.—All these are ramifications from this nerve; the trunk of which has entered the thorax, and runs along the spine under the articulations of the ribs; but it soon divides on each side. The proper great organic pursues its course under the articulations of the vertebræ; and, between the heads of each rib, it swells out into a small ganglion, from each of which filaments proceed to the intercostal nerve; going principally to the motor branch of it, and receiving filaments from it: and thus it reaches the diaphragm, under the crus of which it passes into the abdominal cavity.

The Splanchnic Nerve.—Varying in different subjects, fibres begin to be given off from the trunk of the great organic nerve about the 5th, 6th, and 7th rib, and these unite and form a considerable branch on each side, which descends some distance from the spine, and pursues its course over the ribs, and under the pleura, to the diaphragm, and bearing the name of the *greater splanchnic nerve*. It also enters the abdomen under the crus of the diaphragm. Another smaller branch is given off from the great organic, while it is running along the crus of the diaphragm, and which, after turning backwards, and describing a kind of arch, also enters the abdomen.

The great Organic in the Abdomen.—The main trunk of this nerve continues in the abdomen close to the transverse processes of the vertebræ, and, gradually creeping up the sides of the vertebræ as we proceed backward along the loins, it pursues its course to the pelvis. Opposite to each lumbar nerve a ganglion is formed, and from it two little branches are given off: one anastomoses with the lumbar nerve on the same side, and the other either creeps under the aorta and unites itself to the corresponding branch on the opposite side, or climbs over the aorta, mingling with the net-work of nervous matter from the organic nerve, and which has been continued along the whole course of the vessel, and then, emerging from this plexus, it joins its fellow on the opposite side of the spine. When we reach the pelvis, the great organic still continues its path along the sacrum, forming the same kind of ganglia, and communicating with the sacral nerve on the same side, and with the branch of the organic on the other side, and that through the medium of dense interposed nervous plexuses. Having passed the sacrum, the nerve rapidly diminishes, it runs under the peritoneum for a little way, and then, reduced to extreme minuteness and thinness, it disappears; and, as some tell us, in a

ganglion, formed by the union of the two nerves, which describe a kind of arch to meet each other.

The Splanchnics in the Abdomen.—The splanchnic nerves, having entered the abdomen, bend suddenly downward, and form the principal portion of the semilunar ganglion. A part of the lesser splanchnic is devoted to the same purpose, while another branch of it goes on and enters into the renal plexus. I have already stated, that the cerebro-visceral and the phrenic nerves contribute important branches to the same ganglion.

The Semilunar Ganglion.—Under the posterior aorta, at the root of the cœliac artery, and occupying the space between the cœliac and the anterior mesenteric arteries, the splanchnics, the left branch of the cerebro-visceral, and a branch from the phrenic, meet, and form what has been called the *semilunar ganglion*,

> If shape it might be called, that shape had none
> Distinguishable,—
> Or substance might be called, that shadow seemed,
> For each seemed either.

As these nerves approach each other, they lose their individual form and character; they diffuse themselves into numerous filaments, uniting again to form distinct ganglia; and these matted together and surrounding each other, now blending together, and now separating from each other, then confusedly crossing each other in every direction, so that we have scarcely passed the border of this congeries of nerves, when we cease to be able to follow either of the contributory branches, and have only the mingled substance of all. This ganglion or collection of ganglia, has no determinate shape in any of the domesticated animals; except that you may trace a somewhat convex border posteriorly, and one more concave anteriorly in the direction whence the contributing branches came, and thus forming a rude kind of crescent. From the convex border of this lunar, I would rather call it solar plexus; there are divergent filaments of different consistence and size, and some of them minute, filmy, "shadowy;" these are rays, radiations of nervous influence yet strangely mingling and interweaving with each other, and combining the properties and the powers of the different principles of organic life. Therefore we no longer speak of particular nerves, or branches of nerves, but of plexuses; and we give them a name from the viscus or part to which they are directed. I will not detain you by describing all of them, but I would urge you to follow them in some slow and careful dissection, and observe how every viscus and every portion of the organic system which the abdomen contains, lives and acts by influence derived from this central sun.

The different Plexuses from the Semilunar Ganglion.—The names and the connexions of some of these plexuses, I must briefly run over. *The anterior mesenteric* I find upon the root of the anterior mesenteric artery. As the ganglion was composed principally from the great organic, so it retains the character of that nerve in the mode of its distribution. Whatever may be the ultimate destination or function of some of the fibrils, we find the plexus on an artery, not merely running along it like a motor or a sensitive nerve, but forming a tunic around it, penetrating it at every assignable point, and becoming, as it were, a portion and a part of it. We find this plexus first on the root of the anterior mesenteric artery; and composed, too, not merely of fibres from the semilunar ganglion, but from the lumbar nerves. The plexus pursues the course of the artery—accompanies all its branches—radiates on every side—spreads over the mesentery—encircles the various glands—reaches the small intestines—penetrates with the blood-vessels through their parietes, and ramifies in their internal surface. Other branches of this plexus I can trace to the cæcum and the cœcal portion of the colon.

The Posterior Mesenteric Plexuses.—I have never lost sight of the plexus which thickly covers the large blood-vessels in every portion of their course. The posterior aorta is now more richly supplied, and I trace ramifications from it, over that part of the colon which the anterior plexus had not reached; and to the mesocolon with all its glands; and to the rectum: and here is a reinforcement of nervous power from the branches of the great organic, which I described as still continued along the abdomen, after the splanchnics had formed the semilunar ganglion: and also connected with this plexus are fibres from the lumbar and sacral nerves.

The Renal and Spermatic Plexuses.—Hence I might trace the plexus to the kidneys, reinforced by filaments from the lesser splanchnic: and I might show it to you winding round the origins of the emulgent arteries; and penetrating with them into the very substance of the kidney, and continued even over the ureters; and, continuous with the renal, the *spermatic* plexus, diffused over all the organs of reproduction.

The Hepatic Plexus,—or, to mention only one plexus more, the *hepatic*, seemingly one of great importance. I first find it around the root of the hepatic artery; and trace it about that vessel in its course to the liver, transmitting, however, as it goes along, filaments to the phrenic arteries or those of the diaphragm, and also to the stomach and the pancreas; and then dividing into

two collections of complicated branches, the *right* and the *left* hepatic plexuses. I follow the first over the right hepatic artery, and the vena portæ; and the biliary ducts, and the gall-bladder; and some fibres of it branching off and going to the lower orifice of the stomach, and uniting with the cerebro-visceral, and proceeding with it down the duodenum. The *left* plexus I can also follow to the liver, and through the ramifications of all the vessels of that gland; and I trace it on to the cardiac orifice of the stomach, and observe its anastomosis or identification with the cerebro-visceral here; but all this, Gentlemen, and by some abler anatomist, for I am now too old for that portion of my labour, will at some future time be demonstrated to the veterinary class: but in the mean time I would urge you, at your earliest leisure, to trace this out for yourselves. You may not be able to unravel all the intricacies of the plexuses, but the grand thing will be sufficiently plain, that from this central combination of the influence and power of all the organic nerves, every abdominal and pelvic organ and vessel is supplied.

The Inquiry into the Function of the great Organic somewhat unsatisfactory.—And now, Gentlemen, the most fearful part of my subject, the function of this last of the organic nerves. I cannot forget what Magendie has so truly said, that "suppositions, hypotheses, opinions, are all that the works of physiologists have hitherto presented upon a question the most interesting of all physiology." And that "it would be wiser and more conducive to the advancement of science to confess that, at the present, the use of the sympathetic nerve is unknown." It is unknown—it has not been experimentally proved. I am inclined to believe that it never can be. There is such a chain of intercommunication and connexion between the branches of this nerve and of every other,—such a continuous plexus, if I may so term it, that we know not where or how we shall totally destroy its influence on any part. Experiment may go some way, but after all we shall be principally left to deductions from what we know of other nerves, and what they effect, and what they have left perfectly unaccomplished. This, I feel, is unsatisfactory, but at least it will teach us caution in drawing our conclusions, and diffidence in the statement and defence of our opinions. Some opinion however we must form, or we shall be perfectly at sea on many an important point of physiology and practice. That opinion will be confirmed, or corrected, or overthrown by the result of future experiments. It may prove, as Magendie sarcastically observes, "*a jeu d'esprit*;" but we could tell him, that in the conducting of experiments on subjects like these, there are so many circumstances to be taken into consideration, and so many unforeseen and unobserved causes of error, that the conclusion from them, and long course of them too, if we could divest them of their barbarity, is a more veritable *jeu d'esprit* than any opinions that are grounded on a slow and careful advance from that we do know, to that which we wish to ascertain.

The Function of the Great Organic continued.—I have endeavoured, how satisfactorily you must judge, to determine the function of the nerves derived from the lateral column of the spinal chord; and the result has been, that they are *organic* nerves: and, as being uniformly lost on some muscular expansion, they are *motor organic* nerves, — guiding the mechanism and effecting the movements of the great machine, either totally independent of the will, as in the discharge of the natural function of the different organs; or by constraining the voluntary muscles to assist or to repress the action of the involuntary, when our "comfort or accommodation,"—when the ravages of disease, or the preservation of life, require it. Thus the heart beats and the lungs heave, and the peristaltic motion of the stomach and intestines is carried on. But is this the whole of organic life? No; it is only a part, and a very inferior one,—it is the mechanical part. The food would in vain traverse the stomach and be propelled through the intestinal canal, if there were not a power by which it was dissolved and changed, and its valuable parts separated, and prepared to become blood. The arterialisation of that blood is a mere mechanical and chemical affair. It is exposed to the action of the atmosphere, and it undergoes a change for which the simple principles of chemistry will enable us to account: but, thus arterialised, it would permeate the arterial and capillary vessels to no purpose, if there is not a power by which, in the minuter capillaries, it is assimilated into the substance of the frame, or many a strangely varied secretion is performed. This is the power for which we are now seeking. No beautiful adjustment of various parts,—no exquisite consent of motion between them, can accomplish this. No chemistry will here avail; we can trace its agency to a certain extent, but as we proceed we find its most invariable and energetic laws suspended—subverted. There is a principle still wanting. We must not look for it in the brain: if the mere mechanical part was in a manner independent of the will, at least in its most essential part it was so, this most important portion of organic life must be perfectly so: and so it is. Not only are we unconscious of the solution and chylification of the food, and

the performance of the various secretions, but let every mental "agent" be "bent up" to the terrible feat of arresting or materially interfering with the organic process, we should be perfectly powerless. Where, then, shall we go?

It is the Nutritive or Secretory Nerve.—There is a nerve, the function of which we have not yet determined—the sympathetic or great organic nerve. On what tissue are its ramifications chiefly expended? It is scarcely found ere it is forming complicated plexuses on every neighbouring bloodvessel; it is so even within the cavernous sinus; it is enclosing the carotids, external and internal, with a kind of nervous tunic. I trace it round the temporal to the face and head, and also on every subdivision of the carotid, until, from the minuteness of the vessel and the pulpiness of the nerve, it eludes my sight. I trace it into the thorax, and its ramifications are given to large bloodvessels there; I can follow it in the branching of every vessel, and in the very substance of the viscus, filaments or plexuses of the organic nerve accompany the tube. I examine its course when it enters the abdominal cavity, and there too it is on the roots of the different arteries that the plexus is first observed, and it accompanies the ramifications of each artery to its ultimate destination. Where it ceases I know not. That it accompanies and envelops the capillaries I dare not affirm; but as I gradually lose it through want of visceral power to pursue it, I think it probable that it does accompany and envelop them; and for want of any better, or any other visible agent—for want of any other explanation of its influence over the vessels to which it seems so exclusively directed, I attribute to its agency the most important functions of organic life, nutrition, secretion, and absorption.

Its Anastomoses.—But I perceive another character about this nerve—its anastomosis with every other nerve in the frame, beginning within the cranium, and terminating on the coccygean vertebræ. A singular kind of anastomosis it is, imparting a portion of itself, and receiving fibres from both the roots of the cerebral and spinal nerves, but most of all from the motor. I cannot conceive of the existence of any secretion, which does not imply sensibility in the secreting vessels, and some power exerted in order that an effect may be produced. The gland, or the vessels of the gland, must be conscious of the presence of the substance to be operated upon, and of the accomplishment of that effect; and the vessels themselves cannot be palsied and motionless while the effect is producing. Therefore I have the few sensitive fibrils, but derived from every nerve, for everywhere these secretions are going on. The power of these fibrils, by their connexion with the organic ones, may be so modified, that I shall have the organic sensibility I want, without that animal feeling which would bring the operation too much under the influence of the mind. I have more motor fibrils, for when I look over the frame, I have enough for these secerning vessels to accomplish. And then, for aught I know, when fibrils from the organic nerve are communicated to every spinal one, it may be to add, as it were, a third set of fibres to the two of which it was already composed; and in addition to sensation and the power of motion, to bestow the faculty of secretion, or to assist the discharge of it, in places out of and far away from the thorax or the abdomen.

The Influence of the Nerves on the Secretions.—Have I any experiments to refer to, in corroboration of this?

There are said to be experiments against this hypothesis. The great organic nerve has been divided in the neck, and no perceptible effect followed. I am not aware of the history of these experiments, or the time that elapsed before the animal died, or the result of the experiment supposed to be ascertained; but I must refer again to the innumerable anastomoses which seem to render it difficult or impossible to cut off the influence of this nerve from any other nerve or organ; and I must also observe that the effects of the suspension of the functions of this nerve would not immediately develop themselves. If the par vagum is divided, the animal comparatively soon dies. Respiration is a vital action, and must not be long disturbed, nor at any time suspended: but any or almost all of the secretions may be for a long time suspended, and there will be no apparent distress or irregularity to mark the evil. The true answer however is, that these anastomoses render it difficult or impossible to cut off the influence of the nerve from any organ.

If however I have no experiments, I have many facts elucidating the power of the nerves over the secretions. My illustrations are very simple ones. The secretion of tears from mental emotion would be my first, if I were speaking of the human being; but the deer will weep, and I have seen the tears trickle down the cheek of the horse and the dog. The saliva running from the mouth of the hungry dog watching impatiently for his food;—the obstinate retention of the milk by the cow, until after her calf is supplied; for when the dairy-maid has wrung the last drop she can extract, the mother has retained more than enough for her offspring:—these things show that the cerebral or spinal nerves, not only are concerned in the act of secretion, but, in

some rare cases, and they are rare, they are brought under the direct influence of the mind. Need I speak of the effect of the mind on the motions of all the visceral organs, and more particularly on the nature and quality of the secretions; or of the long train of sympathies which exist between various parts of the organic and animal system? Why should worms in the intestinal canal of the dog produce fits; and staggers in the horse, amaurosis? Why should one morsel of hay and a drop of water invigorate the whole frame of the tired post-horse, or a poison taken into the stomach produce instant death? It is the result of this connected chain of nervous influence. But what has this to do with the great organic nerve? Why, it is the only nerve that has been traced to many of the seats of these sympathies; it is the only nerve that has been traced to many of the glands, and the only one which, attaching itself to the blood-vessels, seems to be pursuing its course, and can be traced so far as our sight will permit, to the main secreting organs, the capillary vessels.

I am detaining you beyond the accustomed time, but I must say one word of the function of this nerve within the abdomen. In the semilunar ganglion it has united itself to a portion of the cerebro-visceral and the phrenic. Let me recall to your recollection one viscus, the stomach, in which the effect of two of them was plainly distinct. The cerebro-visceral was divided—chyle was still produced. The food was partially digested—but for want of the peristaltic motion of the stomach, it could not be brought successively within the influence of the gastric juice. Here are plainly displayed the functions of the two nerves, the great organic penetrating the coats of the stomach, and producing the secretion of the solvent fluid—the cerebro-visceral producing the peristaltic motion: and so it is throughout the intestinal canal: we have the phrenic nerve to assist in the compression and final expulsion of the food by contracting the diaphragm, and diminishing the abdominal cavity, while the abdominal and thoracic muscles are contributing their aid by means of these frequent anastomoses.

And now, Gentlemen, I have done with the nervous system. Of the nature of the nervous agency or fluid, or of the mysterious presiding power, whether it regards the animal or organic life, or both, I will not say a word. You will refer, at some period of serious leisure, to the speculations of physiologists on these abstruse but interesting points. You will find in Dr. Bostock's excellent "Compendium of Physiology," a clear statement and luminous comparison of all that has been said and written. With regard to this great organic nerve, you will have the most laboured and the best account of its functions in a note by Dr. Copland appended to his Translation of Richerand, although the mere experimentalist perhaps will tell you that it is nothing but, "supposition, hypothesis, and opinion—a mere *jeu d'esprit*." But I must conclude.

I feel, and you must have experienced, how difficult it is in a few lectures, and even assisted by demonstrations, to give a clear as well as comprehensive view of such a subject. If, however, I have succeeded in convincing you, that with regard to the animal system at least, it is not so mysterious as you perhaps had imagined; and if I have afforded the slightest clue to the understanding of a portion of the organic system, I am content. As for my peculiar opinions, I have stated none of them positively. Some of them are adopted, not as being satisfactory, but for want of better; and I trust you and I will always be open to conviction, and zealous in our search after truth.

AN ACT

FOR REGULATING

SCHOOLS OF ANATOMY.

August 1*st*, 1832.

PREAMBLE.—*Secretary of State to grant Licenses to practise Anatomy.*

WHEREAS a knowledge of the causes and nature of sundry diseases which affect the body, and of the best methods of treating and curing such diseases, and of healing and repairing divers wounds and injuries to which the human frame is liable, cannot be acquired without the aid of anatomical examination; and whereas the legal supply of human bodies for such anatomical examination is insufficient fully to provide the means of such knowledge: and whereas, in order further to supply human bodies for such purposes, divers great and grievous crimes have been committed, and lately murder, for the single object of selling for such purposes the bodies of the persons so murdered: and whereas therefore it is highly expedient to give protection, under certain regulations, to the study and practice of anatomy, and to prevent, as far as may be, such great and grievous crimes and murder as aforesaid; be it therefore enacted by the King's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assem-

bled, and by the authority of the same, That it shall be lawful for his Majesty's principal Secretary of State for the time being for the Home Department in that part of the United Kingdom called Great Britain, and for the chief Secretary for Ireland in that part of the United Kingdom called Ireland, immediately on the passing of this Act, or so soon thereafter as may be required, to grant a license to practise anatomy to any fellow or member of any college of physicians or surgeons, or to any graduate or licentiate in medicine, or to any person lawfully qualified to practise medicine in any part of the United Kingdom, or to any professor or teacher of anatomy, medicine, or surgery, or to any student attending any school of anatomy, on application from such party for such purpose, countersigned by two of his Majesty's justices of the peace acting for the county, city, borough, or place, wherein such party resides, certifying that, to their knowledge or belief, such party so applying is about to carry on the practice of anatomy.

Secretary of State to appoint Inspectors of Schools of Anatomy.

II. And be it enacted, That it shall be lawful for his Majesty's said principal Secretary of State or chief secretary, as the case may be, immediately on the passing of this Act, or as soon thereafter as may be necessary, to appoint respectively not fewer than three persons to be inspectors of places where anatomy is carried on, and at any time after such first appointment to appoint, if they shall see fit, one or more other person or persons to be an inspector or inspectors as aforesaid; and every such inspector shall continue in office for one year, or until he be removed by the said Secretary of State or chief secretary, as the case may be, or until some other person shall be appointed in his place; and as often as any inspector appointed as aforesaid shall die, or shall be removed from his said office, or shall refuse or become unable to act, it shall be lawful for the said Secretary of State or chief Secretary, as the case may be, to appoint another person to be inspector in his room.

And to direct what District each Inspector shall superintend.

III. And be it enacted, That it shall be lawful for the said Secretary of State or chief secretary, as the case may be, to direct what district of town or country, or of both, and what places where anatomy is carried on, situate within such district, every such inspector shall be appointed to superintend, and in what manner every such inspector shall transact the duties of his office.

Inspectors to make Returns of Subjects removed for Anatomical Examination.

IV. And be it enacted, That every inspector to be appointed by virtue of this Act shall make a quarterly return to the said Secretary of State or chief secretary, as the case may be, of every deceased person's body that during the preceding quarter has been removed for anatomical examination to every separate place in his district where anatomy is carried on, distinguishing the sex, and, as far as is known at the time, the name and age of each person whose body was so removed as aforesaid.

And to inspect Places where Anatomy is practised.

V. And be it enacted, That it shall be lawful for every such inspector to visit and inspect, at any time, any place within his district, notice of which place has been given, as is hereinafter directed, that it is intended there to practise anatomy.

Salaries to Inspectors.

VI. And be it enacted, That it shall be lawful for his Majesty to grant to every such inspector such an annual salary, not exceeding one hundred pounds, for his trouble, and to allow such a sum of money for the expenses of his office, as may appear reasonable; such salaries and allowances to be charged on the consolidated fund of the United Kingdom, and to be payable quarterly; and that an annual return of all such salaries and allowances shall be made to Parliament.

Persons having lawful Custody of Bodies may permit them to undergo Anatomical Examination in certain Cases.

VII. And be it enacted, That it shall be lawful for any executor or other party having lawful possession of the body of any deceased person, and not being an undertaker or other party intrusted with the body for the purpose only of interment, to permit the body of such deceased person to undergo anatomical examination, unless, to the knowledge of such executor or other party, such person shall have expressed his desire, either in writing at any time during his life, or verbally in the presence of two or more witnesses during the illness whereof he died, that his body after death might not undergo such examination, or unless the surviving husband or wife, or any known relative of the deceased person, shall require the body to be interred without such examination.

Provision in case of Persons directing Anatomical Examinations after their Death.

VIII. And be it enacted, That if any person, either in writing at any time during

his life, or verbally in the presence of two or more witnesses during the illness whereof he died, shall direct that his body after death be examined anatomically, or shall nominate any party by this Act authorised to examine bodies anatomically to make such examination, and if, before the burial of the body of such person, such direction or nomination shall be made known to the party having lawful possession of the dead body, then such last-mentioned party shall direct such examination to be made, and, in case of any such nomination as aforesaid, shall request and permit any party so authorised and nominated as aforesaid to make such examination, unless the deceased person's surviving husband or wife, or nearest known relative, or any one or more of such person's nearest known relatives, being of kin in the same degree, shall require the body to be interred without such examination.

The Body not to be removed from the Place where such Person may have died without a Certificate.

IX. Provided always, and be it enacted, That in no case shall the body of any person be removed for anatomical examination from any place where such person may have died, until after forty-eight hours from the time of such person's decease, nor until after twenty-four hours notice, to be reckoned from the time of such decease, to the inspector of the district, of the intended removal of the body, or, if no such inspector have been appointed, to some physician, surgeon, or apothecary, residing at or near the place of death, nor unless a certificate stating in what manner such person came by his death shall previously to the removal of the body have been signed by the physician, surgeon, or apothecary, who attended such person during the illness whereof he died, or if no such medical man attended such person during such illness, then by some physician, surgeon, or apothecary, who shall be called in after the death of such person to view his body, and who shall state the manner or cause of death according to the best of his knowledge and belief, but who shall not be concerned in examining the body after removal; and that in case of such removal, such certificate shall be delivered, together with the body, to the party receiving the same for anatomical examination.

Professors, Surgeons, and others, may receive Bodies for Anatomical Examination.

X. And be it enacted, That it shall be lawful for any member or fellow of any college of physicians or surgeons, or any graduate or licentiate in medicine, or any person lawfully qualified to practise medicine in any part of the United Kingdom, or any professor, teacher, or student of anatomy, medicine, or surgery, having a license from his Majesty's principal Secretary of State or chief secretary as aforesaid, to receive or possess for anatomical examination, or to examine anatomically, the body of any person deceased, if permitted or directed so to do by a party who had at the time of giving such permission or direction lawful possession of the body, and who had power, in pursuance of the provisions of this Act, to permit or cause the body to be so examined, and provided such certificate as aforesaid were delivered by such party together with the body.

Such Persons to receive with the Body a Certificate as aforesaid, which shall be transmitted to the Inspector.

XI. And be it enacted, That every party so receiving a body for anatomical examination after removal shall demand and receive, together with the body, a certificate as aforesaid, and shall, within twenty-four hours next after such removal, transmit to the inspector of the district such certificate, and also a return stating at what day and hour, and from whom the body was received, the date and place of death, the sex, and (as far as is known at the time) the Christian and surname, age, and last place of abode of such person, or, if no such inspector have been appointed, to some physician, surgeon, or apothecary, residing at or near the place to which the body is removed, and shall enter, or cause to be entered, the aforesaid particulars relating thereto, and a copy of the certificate he received therewith, in a book to be kept by him for that purpose, and shall produce such book whenever required so to do by any inspector so appointed as aforesaid.

Notice to be given to Secretary of State of Places where Anatomy is about to be practised.

XII. And be it enacted, That it shall not be lawful for any party to carry on or teach anatomy at any place, or at any place to receive or possess for anatomical examination, or examine anatomically, any deceased person's body after removal of the same, unless such party, or the owner or occupier of such place, or some party by this Act authorised to examine bodies anatomically, shall, at least one week before the first receipt or possession of a body for such purpose at such place, have given notice to the said Secretary of State or chief secretary, as the case may be, of the place where it is intended to practise anatomy.

How Bodies are to be removed for Examination.—Provision for Interment.

XIII. Provided always, and be it enacted, That every such body so removed as aforesaid for the purpose of examination shall, before such removal, be placed in a decent coffin or shell, and be removed therein; and that the party removing the same, or causing the same to be removed as aforesaid, shall make provision that such body, after undergoing anatomical examination, be decently interred in consecrated ground, or in some public burial-ground in use for persons of that religious persuasion to which the person whose body was so removed belonged; and that a certificate of the interment of such body shall be transmitted to the inspector of the district within six weeks after the day on which such body was received as aforesaid.

Persons described in this Act not to be liable to Punishment for having in their possession Human Bodies.

XIV. And be it enacted, That no member or fellow of any college of physicians or surgeons, nor any graduate or licentiate in medicine, nor any person lawfully qualified to practise medicine in any part of the United Kingdom, nor any professor, teacher, or student of anatomy, medicine, or surgery, having a license from his Majesty's principal Secretary of State or chief secretary as aforesaid, shall be liable to any prosecution, penalty, forfeiture, or punishment, for receiving or having in his possession for anatomical examination, or for examining anatomically any dead human body, according to the provisions of this Act.

Act not to prohibit Post-Mortem Examination.

XV. And be it enacted, That nothing in this Act contained shall be construed to extend to, or to prohibit any post-mortem examination of any human body required or directed to be made by any competent legal authority.

So much of 9 Geo. 4. c. 31, as directs that the Bodies of Murderers may be dissected, repealed. Such Bodies to be hung in chains or buried, as the Court shall direct.

XVI. And whereas an Act was passed in the ninth year of the reign of his late Majesty, for consolidating and amending the statutes in England relative to offences against the person, by which latter Act it is enacted, that the body of every person convicted of murder shall, after execution, either be dissected or hung in chains, as to the court which tried the offender shall seem meet; and that the sentence to be pronounced by the court shall express that the body of the offender shall be dissected or hung in chains, whichsoever of the two the court shall order; be it enacted, That so much of the said last-recited Act as authorises the court, if it shall see fit, to direct that the body of a person convicted of murder shall, after execution, be dissected, be and the same is hereby repealed; and that in every case of conviction of any prisoner for murder, the court before which such prisoner shall have been tried shall direct such prisoner either to be hung in chains, or to be buried within the precincts of the prison in which such prisoner shall have been confined after conviction, as to such court shall seem meet; and that the sentence to be pronounced by the court shall express that the body of such prisoner shall be hung in chains, or buried within the precincts of the prison, whichever of the two the court shall order.

Limitation of Actions.

XVII. And be it enacted, That if any action or suit shall be commenced or brought against any person for anything done in pursuance of this Act, the same shall be commenced within six calendar months next after the cause of action accrued; and the defendant in every such action or suit may, at his election, plead the matter specially, or the general issue not guilty, and give this act and the special matter in evidence at any trial to be had thereupon.

Offences against this Act.

XVIII. And be it enacted, that any person offending against the provisions of this Act in England or Ireland shall be deemed and taken to be guilty of a misdemeanor, and being duly convicted thereof, shall be punished by imprisonment for a term not exceeding three months, or by a fine not exceeding fifty pounds, at the discretion of the court before which he shall be tried; and any person offending against the provisions of this act in Scotland shall, upon being duly convicted of such offence, be punished by imprisonment for a term not exceeding three months, or by a fine not exceeding fifty pounds, at the discretion of the court before which he shall be tried.

Interpretation of certain Words in this Act.

XIX. And in order to remove doubts as to the meaning of certain words in this Act, be it enacted, that the words "person and party" shall be respectively deemed to include any number of persons, or any society, whether by charter or otherwise; and that the meaning of the aforesaid words shall not be restricted although the same may be subsequently referred to in the singular number and masculine gender only.

Commencement of Act.

XX. And be it enacted, that this Act shall commence and take effect from and after the first day of August in the present year.

Act may be amended.

XXI. And be it enacted, that this act may be altered or amended during the present session of Parliament.

ANATOMISTS AND INSPECTORS.

CIRCULARS DRAWN UP BY DR. SOMERVILLE, *Inspector of Anatomy, London.*

SIR,—I am desirous, on being appointed inspector pursuant to the Act for regulating the Schools of Anatomy, to solicit your co-operation in carrying into execution the enactments of the legislature.

In order to facilitate this object, and to secure uniformity and regularity of proceeding, I beg leave to submit to you a general form of return as required by the statute, together with an abstract of the duties which appear to me to be imposed by it upon teachers of anatomy. It is unnecessary for me to point out how important it is for the satisfaction of the public mind, that the natural feelings of human nature should be consulted by a strict attention to the 13th section of the Act, which provides for the decent interment of bodies after they have undergone anatomical examination.

I have only to add, that I shall be anxious to receive such advice and information as your knowledge and experience may suggest, and to assure you that any such communications, as well as the returns, shall be considered by me strictly secret and confidential, and shall only be reported to the public authorities as directed and required by the Act of Parliament. I am, Sir,

Your obedient servant,

J. C. SOMERVILLE.

Office of Inspector of Anatomy, 5, Saville Row, 30th Aug. 1832.

FORM OF APPLICATION FOR A LICENSE TO PRACTISE ANATOMY.

The party applying for a license to practise anatomy must make a written application to the Secretary of State, signed by him with his christian and surname at length, in which application he must state he applies for a license to practise anatomy, in pursuance of the Act passed for regulating schools of anatomy. He must state also the place of his residence, and the place where he is about to carry on the practice of anatomy, and must further state that he is, according as the case may be [a fellow or member of a College of Physicians or Surgeons], or [a graduate or licentiate in medicine], or [a person lawfully qualified to practise medicine in England, Scotland, or Ireland], or [a professor or teacher of anatomy, medicine, or surgery], or [a student attending a school of anatomy.]

This application is to be countersigned by two justices of the peace acting for the county, city, or borough wherein the party applying resides, and so describing themselves, certifying the place of residence of the party, and also the place where they believe him to be about to carry on the practice of anatomy.

DUTIES OF TEACHERS OF ANATOMY.

To obtain a license according to the provisions of the Act 2d and 3d Will. IV. c. 75.

Upon receiving a body for anatomical examination, to demand and receive with the body a certificate from the physician, surgeon, or apothecary, who attended the person during the illness of which he died, or from some surgeon, physician, or apothecary, who shall have been called in after the death of such person to view the body, stating the manner or cause of the death, and to transmit within twenty-four hours next after the removal of the body, such certificate to the inspector of the district, and also a return, stating at what day and hour, and for whom the body was received, the date and place of death, the sex, and, as far as is known at the time, the christian and surname, age, and last place of abode of such person; or if no such inspector shall have been appointed, to some physician, surgeon, or apothecary, residing at or near the place to which the body is removed; and to enter, or cause to be entered, the aforesaid particulars, and a copy of the certificate, in a book to be kept by him for that purpose, and to produce such book whenever required by the inspector.

To give notice to the Secretary of State of every place where it is intended to practise anatomy at least one week before the first receipt or possession of a dead body for such purpose at such place.

To take care that every body removed for examination shall be removed in a decent and fitting manner, and to make provision that such body, after undergoing anatomical examination, be decently interred according to the thirteenth clause of the said Act; and that a certificate of the interment of such body be transmitted to the inspector of the district within six weeks after the day of the reception of such body.

Confidential Return from the School of Anatomy at ——————

as required by the 2d and 3d Will. IV. c. 75.

Christian Name and Surname of Deceased.	Age and Sex.	Last Place of abode of deceased.	Date and Place of Death.	Time of Removal.	Day and Hour at which the Body was received, and from whom.	Observations.

(Signed) ——————*Teacher.*

DUTIES OF THE INSPECTOR.

He shall keep an account of all the schools of anatomy licensed by the Secretary of State within the district for which he shall be appointed, with the names and residences of the teachers.

He shall make a quarterly return to the Secretary of State of the body of every deceased person, that during the preceding quarter has been removed for anatomical examination to every separate place in his district where anatomy is carried on; distinguishing the sex, and, as far as is known at the time, the name and age of each person whose body has been so removed as aforesaid.

He shall visit and inspect from time to time every place within his district, of which place notice has been given that it is intended there to practise anatomy; he shall take care that the provisions of the Act of Parliament are enforced, and shall report to the Secretary of State any irregularities or offences against the Act which he shall observe.

He shall enter, in a register kept for the purpose, the returns from each school separately, and shall keep copies of all his returns and reports to the Secretary of State, and shall enter all the correspondence relating to the duties of his office in a letter book.

CASE OF

CARCINOMA OF THE UTERUS.

By A. A. Harvey, *M. D., Bath.*

Being called in to attend Mrs. Cook of this city, ætat. 46, I found her labouring under this almost incurable disease in its last stage. The discharge from the uterus continual, excessive, and very fetid. She was confined to her bed from debility, and very much reduced in flesh; and her case hopeless, which can be affirmed by Dr. Shuttlebury and Mr. Mansford, surgeon, of this place. Having been successful in one case before, I undertook to attend, and her cure was perfected in the space of ten weeks, by the following remedies. She has continued free from the disease ever since (*five years*), and is in good health.

℞ *Decocti cort. Peruv.* ℥vii;
Tincturæ ejusdem comp.;
Syrupi papav. albi; aa ℥ss;
Liquor arsenicalis (Fowler's) guttas xx
M fiat mistura; cap. cochl. amp. ii *ter in die.*

℞ *Opii purif.* gr. ij; *ft. pilula omni nocte hora somni sumenda;*
Ol. ricini ℥ss *pro re nata.*

℞ *Infusi laur. cerasi* ℔ss;
Decocti querci, font ℔iss;
Tinct. myrrh ℥i;
Tinct. opii ℥ss;
Argenti nitrati ʒi. *M fiat injectio bis in die utenda.*

Warm milk and laudanum thrown up the rectum *daily*.

The above remedies were occasionally altered, as symptoms required.

I should not have mentioned this case had it not been for one of the remedies lately stated to have been used by a Mr. Jewel in vaginal discharges, but whether it was the caustic laurel or arsenic which effected the cure in Mrs. Cook's case I know not. I should rather think the laurel, as I have used a tincture of the latter with the happiest success in tubercular consumption with considerable increased vascular action, and it has brought down the pulse from 100 or 120 in the minute to 80 and under, in a few days, with the assistance of one or two bleedings, and a few saline purgatives, after which I have given tonics, and invariably cured the disease.

Bath, August 27, 1832.

TREATMENT OF CHOLERA

ON BOARD THE

CIRCASSIAN, CONVICT SHIP.*

SIR,—I beg leave to transmit the cases of Martin Kelly and Ann M'Namara, persons embarked on board this ship, which although not so severe as some commonly met with, still, I am of opinion, had they not been early under treatment, might ultimately have proved so.

My treatment of diarrhœa is simply this. I bleed them to not above sixteen ounces, on the very first application to me, which has generally been in the early stage of the disease, owing to the very strict orders which I have given to that effect. I then immediately commence giving three grains of calomel, and half a grain of opium every four hours, until the gums begin to be sensibly affected, and the dejections, which at first are of a very light colour, and in most instances watery, have assumed a healthy appearance.

I then give them a little rhubarb and magnesia in peppermint water; and of the twenty-nine cases which I have had (exclusive of the four of cholera) four have this day been discharged to duty, and the others are all in a most favourable state; indeed a great part of them are only continued in the Return to owing the soreness of their mouths, and the danger of relapse from imprudences in their diet.

The ship is tolerably well ventilated, and the prisons, hospitals, and barracks, are daily fumigated and sprinkled with chloride of lime, and the people kept in the greatest possible state of cleanliness.

I am, Sir,

Your much obliged and very humble servant,

WM. PORTEOUS.

Circassian Convict-Ship,
Standgate Creek, Aug. 29, 1832.
To W. Maclean, Esq.

Report of two Cases of Cholera on board of the Circassian Convict Ship off Woolwich.

CASE I.

Ann M'Namara (soldier's wife), aged 18, was attacked at eleven p. m., on the 18th of August, with vomiting, griping, and purging, followed towards the morning by cramps in the abdominal muscles, and excessive thirst.

She says that she vomited four times, but the purging was almost incessant until eight o'clock this morning (19th), and she does not know the nature of the dejections farther than that they were watery, but the matter ejected from the stomach tasted bitter. At eight o'clock she complained to me, and was then suffering severely from cramp in the abdominal muscles; countenance anxious but not shrunk; pulse 76, of good strength. The vomiting had ceased, but she had been purged about a quarter of an hour previously.

I gave her immediately twenty-five drops of laudanum in half a wineglassful of brandy, and bottles of hot water were applied to the abdomen, after which she had no more purging or vomiting. The cramp left her in a short time, when she fell asleep, and continued so for about an hour.

At one p. m., she had a copious loose stool, resembling very thin rice-water, without any griping. She had great thirst and vertigo, and had occasional slight twitches of cramp in the abdominal muscles during the day, for which she took six or seven drops of laudanum in a very small quantity of brandy, three or four times, and the hot water was continued.

At ten a. m., she began taking four grains of calomel and half a grain of opium every four hours, and warm gruel was given for drink, which treatment was continued during the night.

Next morning she was much better; had slept a little; the pain had entirely left her; had had three or four loose dejections of the same nature as the one above mentioned; and about two o'clock she voided urine for the first time for twenty-four hours. Pulse 80.

The calomel and opium were continued throughout the day, and she had two or three loose dejections, each succeeding one of more natural appearance; and on the morning of the 21st they were perfectly healthy, and she rapidly recovered without any other particular symptom.

CASE II.

Martin Kelly (soldier), aged 28, complained to me on the morning of the 23d of August, of having been purged two or three times during the night without any griping. His dejections were described as being light coloured. He took three grains of calomel and half a grain of opium every four hours during the day and throughout the night.

At noon on the 24th, while sitting on the poop, he was suddenly seized with vertigo and a sense of faintness, of which I was almost immediately informed; and when seen, he complained of excessive weakness and great nausea, but he had not

* Communicated by the Central Board of Health.

vomited nor had he been purged since the morning, and then only once, and once during the night. His countenance was pale and almost ghastly; pulse weak, irregular, and about 80, and his skin was covered with a profuse cold perspiration.

I had him immediately conveyed to the hospital, and put to bed; bled him to ʒxvi; gave him twenty-five drops of laudanum in two ounces of brandy, and applied warmth to his extremities.

He expressed himself immediately relieved by the bleeding; the pulse became regular and full; the cold perspiration was succeeded by a fine warm moisture, and he had no farther unpleasant symptom.

The calomel and opium were continued every four hours, until the morning of the 26th, when his gums were slightly affected, and the dejections, which at first were loose and very light coloured, became quite natural. He then took a dose of rhubarb and magnesia, which operated, and without having any other particular symptom, he was this day discharged to duty.

W. Porteous,
Surgeon Superintendent.

Standgate Creek, Aug. 29, 1832.

COLD WATER

IN THE COLLAPSE STAGE OF

MALIGNANT CHOLERA.

To the Members of the Central Board of Health, *London.*

Gentlemen,—The perusal of Dr. Hardwicke Shute's communications induces me to transmit an account of a most severe case successfully treated some weeks back almost on the same principles.

On the 6th August, at seven p.m., I visited a young man, ætat. 20, who was in the confirmed collapse stage of cholera, attended with the following symptoms:—General coldness and purplish colour of the skin, from every pore of which issued copious cold perspiration, or rather cold water; breath and tongue cold, the latter feeling like a frog; no pulse at the wrist; cramps in almost every muscle, and the vomiting and purging of transparent fluid excessive; urine suppressed; the countenance, if at first in any degree shrunken, became in less than an hour completely collapsed, and the voice decidedly a choleric whisper. On the 7th the pulse had not returned, yet the diarrhœa was considerably checked, but an immoderate flow of urine for a short time was observed. The skin was dry, though still purplish and cold; cramps not so urgent; tongue no longer cold; slightly crusted; vomiting quite as frequent and copious. On the 8th there was some improvement, some warmth of skin, but no urine. On the 9th, a slight tinge of bile in the evacuations; no urine; pulse returned, but beating slowly. On the 10th, motions decidedly bilious, and the last feculent. Skin warm and pulse better; no urine till the 11th, from which time he gradually improved; was out on the 16th, and resumed his labour on the 24th, having had scarcely any consecutive fever.

The treatment was as follows:—A mustard plaster was applied to the spine, from the occiput to the sacrum, and followed by a blister spread on adhesive plaster. An enema of starch and laudanum was immediately administered, repeated in three hours, and then every twelve hours for four days; but after every loose motion, three-fourths of a pint of starch alone were thrown up the rectum. No medicine of any kind, but cold water as much and as frequently as the patient desired.

A medical friend, who saw this case with me on the 11th, afterwards treated a pulseless old man, ætat. 70, on the same plan, except giving 40 drops of laudanum in chalk mixture, and speedy recovery ensued; reaction being so decided as to allow of bleeding.

I gave cold water *ad libitum* to the first patient I attended with cholera, and withdrew all stimulants, and succeeded; but many other remedies were also tried, and it was not till I lost two cases, and witnessed many deaths under other plans, that in the cold stage I adopted the simple method above detailed. Experience alone can decide, whether the counter-irritation be or be not essential in addition to the cold water. I am, Gentlemen,

Your obedient servant,
Joseph B. Whiting.

King's Lynn, Sept. 2nd, 1832.

In premonitory cases, the astringent and opiate plan recommended to the medical practitioners of this town by my brother Dr. Whiting, has been marked by the most decided success in arresting the progress of the disease, of which there have certainly been *three*, if not five importations.

TREATMENT OF

MALIGNANT CHOLERA.

BY

CALOMEL, OPIUM, BRANDY, AND HYDROCYANIC ACID.

By W. P. FOSTER, *Esq., M.R.C.S., Hackney.*

HAVING, at the request of the governors of the poor of the parish of Bermondsey, attended at the establishment at Merton in Surrey for the reception of the aged poor and the parish children, amongst whom the cholera has prevailed to a great extent, and having met with the most gratifying results from the treatment I adopted, I think it right to make it generally known.

With the exception of nine cases, in which there was no discoloration of the skin, and of four, in which the fluid vomited was of the same character as the dejections, the symptoms were analogous in all the cases which came under my notice. I need, therefore, only state the particulars of one of each description, with the treatment adopted.

CASE I.

John Hayes, ætat, 11, was attacked July 14th at half past nine a.m., with violent vomiting and purging. I saw him within a few minutes after the attack; he complained of violent pain in the bowels and head; vomiting and purging almost incessant; great prostration of strength; eye glassy and much sunk; countenance depicted extreme anxiety; the whole surface cold; excessive thirst; tongue loaded with a brown fur in the middle, but white towards the edge, perfectly cold; the pulse in the radial artery imperceptible, and action of the heart nearly so; skin surrounding eyes and lips quite blue, which shortly extended over the whole body; had passed no urine since preceding evening. I had him undressed and wrapped in a warm blanket, and covered with twelve or fourteen others; administered ʒiij brandy undiluted; followed immediately by hyd. submur. gr. x; pulv. opii gr. i; vomiting ceased for about five minutes; but returning, gave ʒi brandy, and repeated same every five minutes.

Half past ten a.m. (about an hour after I first saw him); pulsation at wrist was quite perceptible, perspiration copious, and he passed some urine; vomiting and purging still continued, but not so frequent; alvine secretions as clear as water, with small particles floating, resembling grains of boiled rice, and about same size. Eleven a.m. Blueness gradually subsiding; has only vomited once last half hour; brandy repeated.—Twelve o'clock. Pains in abdomen much relieved; dejections not so watery and less frequent; pulse 120; quite distinct, but feeble; tongue much cleaner; vomiting ceased.—Two p.m. Vomiting returned; repeat brandy.—Four p.m. Has not vomited since the last brandy; motions appear slightly turgid with bile; perspiration continues copious; has passed great quantity of urine.—Seven p.m. Motions very offensive; much more natural, and bile very apparent; feels inclined to sleep.—Ten p.m. Sleeping roundly; pulse 96, and fuller; vomiting not returned; skin moist, and of natural colour.

July 5. Two a.m. Slept since I last saw him; p. 96; skin moist.—Six a.m. Passed two motions, last almost natural, large proportion of bile; no pain; complains only of weakness; tongue clean; pulse 96. Ordered strong beef-tea with small proportion of bread every two hours; glass of port wine twice a day.

6. Is quite convalescent; mutton chop for dinner; continue port wine a few days.

CASE II.

Elizabeth Jones, ætat. 14, attacked 6th July at half past ten a.m. Pain in head and bowels; constant vomiting and purging; eyes glassy and much sunk; countenance anxious; whole surface cold; no pain at wrist; action of heart very feeble; does not remember when last passed urine, but not for some hours previous to the attack; tongue furred, brown in middle, white towards edges; quite cold; prostration of strength so great as scarcely to be able to turn in bed. Gave ʒiij brandy, immediately followed by hyd. submur. gr. iij; pulv. opii gr. i, in form of powder, repeating brandy in ʒi doses every five minutes, till copious perspiration appeared and pulse became distinct.—Twelve o'clock. Vomiting continues; repeat brandy; dejections of consistence of thin gruel.—One p.m. Motions more watery, and continue as frequent as at commencement; vomiting continues; pulse 130; very feeble; tongue cleaner; continue brandy.—Three p.m. Vomiting continues; no pain; motions quite pellucid, with similar appearance as noted in former case, and fluid vomited precisely the same. Sumt. acid hydrocyanic gtt. i, in aquâ; repeat brandy four p.m. Has not vomited since the prussic acid; dejections not so frequent or so watery; pulse 98, and feeble; countenance much less anxious, tongue much cleaner.—Six p.m. Has just passed a motion evidently tinged with bile; no return of vomiting; pain quite subsided; feels drowsy; tongue clean; pulse 94 and fuller.—Ten p.m. Is much refreshed by

sleep; no pain; complains only of weakness. Ordered beef-tea and bread, as in former case.

July 7. Quite convalescent; this patient never became blue.

I think these cases sufficiently show the treatment pursued. I had altogether forty-seven cases of decided Asiatic cholera; the symptoms in all were the same, excepting the vomiting in some being more violent than in others, and the difference noted in the early part of this letter; out of these I lost but one, under the following circumstances.

CASE III.

Joseph Goodacre, ætat. 24, who had suffered from paralysis of lower extremities since birth, and of a weakly constitution, was seized about half-past two a. m., July 7th. A short time previously, I had seen him in bed apparently in usual health. I was not sent for till half-past s.x, owing to his concealing the symptoms of the case from the watchman who went round every half hour. The whole of his face and body was then of a dark slate colour, or rather approaching to purple; surface cold, no pulse at wrist, and action of heart quite imperceptible; tongue intensely cold; and almost black; dejections resembling water with same appearance as in former cases, and the fluid vomited so similar, that it would have been difficult, if not impossible, to distinguish one from the other. Gave half a pint of brandy undiluted, followed by hyd. submur. gr. x, pulv. opii gr. i, repeating brandy in ℥ii doses every three minutes, but without any effect. Mustard cataplasms were applied over the whole of the chest, abdomen, and legs, and hot bottles to feet; cramps in bowels and extremities were excruciating. Vomiting was allayed by ii gtt. prussic acid in half a wineglass of cold water. He died without any alteration of symptoms at half-past one p. m., being ill about eleven hours. The action of the heart was never perceptible from the time I first saw him. He stated having passed a usual quantity of urine about half an hour previous to the attack.

Previously to adopting the mode of treatment described, I had *seen* two cases of cholera, which were treated with saline medicines and small doses of calomel and opium with camphor, accompanied by hot brandy-and-water in small quantities, and injections of gruel, with half an ounce of tinct. of opium in each, but both proved fatal. As early as possible I had each patient wrapped in a blanket, and covered with 12 or 14 others at once; and bathing the palms of the hands with vinegar, I found most successful in allaying the extreme thirst so generally complained of. The brandy appears to me extremely useful in restoring the circulation, and inducing copious perspiration; and I feel satisfied, that if medical aid be sought at the commencement of the disease, and the treatment followed which I have found attended with such success, the fatality of the present alarming epidemic will be materially diminished. It is worth noting, that though most of the inmates (about 170 in number) occupy double beds; there was no one instance in which both individuals were attacked. This does not bespeak contagion, at least in the early stages of the disease.

Church-street, Hackney,
29th August, 1832.

TREATMENT OF

MALIGNANT CHOLERA,

BY CALOMEL.

By J. Stanley, M.D., *Whitehaven.*

Sir,—Previous to actually seeing cases of spasmodic cholera, medical men are, in my opinion, in almost total ignorance of the real appearance and character of this dreadful disease,—for any description, however accurate, falls far short of the reality; they are also in the same predicament respecting the treatment, so many and various are the modes pointed out by different practitioners. Calomel, or some preparation of mercury, combined with opium, constitutes some part of the treatment in the majority of instances, but not totally so, as in those of Dr. Ayre and one or two others. Prior to the disease visiting this town, I had made up my mind to give the mercurial plan a trial on the first favourable opportunity. Aware as you must be of the difficulty of enforcing strict attention to the exhibition of medicines among the lower classes, especially when they are to be given in small and frequently-repeated doses, I was obliged to wait till my period of attendance on the cholera hospital afforded me that opportunity.

I selected three cases, the one a collier, aged 36, admitted in the stage of collapse. Pulse gone; skin cold and blue; the voice extremely feeble; strong characteristic expression of countenance, with vomiting and purging. The second a sailor, aged 17; collapse commencing; diminished pulse; coldness of surface; violent and frequent vomiting and purging; cramps of the muscles; with premonitory symptoms for three or four days. The third, a collier, aged 28; collapse commencing; violent spasms; vomiting and purging; feeble pulse; with cold and livid extremities.

In describing the treatment, which was

similar in all, I shall take the first case. Previous to my seeing the patients, the nurses had applied mustard cataplasms over the stomach and bowels, with friction to the limbs, and a draught of hot tea, with a spoonful of brandy, which was quickly ejected. I immediately ordered 15 grs. of calomel, with half a gr. of opium, to be formed into a pill, given directly and repeated, every quarter of an hour till four doses were taken, after which a pill, containing 1½ gr. of calomel was directed to be given every quarter of an hour, with a tablespoonful of a mixture containing about two drops of laudanum, and the same of the sp. am. arom. after each pill. This plan was continued for 24 hours without intermission, at the end of which period, by gradual steps the purging ceased, the pulse returned, the livid colour disappeared, a general warmth and universal perspiration were produced, the voice grew stronger, and the improvement was so decided, that I ordered one pill only to be taken every hour, after twelve hours this was discontinued, the patient having no material ailment except debility; it was now necessary to give an aperient, the bowels being in a constipated state. He was discharged in four days well; no salivation ensued; the only troublesome symptom during the cure was excessive thirst; this made him incessantly call for drink, of which, if the nurses inadvertently gave too much, vomiting was excited; I found very small effervescing draughts the most efficient in removing it.

In this case then 219 grains of mercury were taken without any appearance of ptyalism being produced, or any unpleasant symptom.

The other two cases were treated exactly similar and with the same results, but being somewhat milder in their symptoms, a less quantity of mercury was necessary. The first case was considered by those who saw it as a hopeless one.

I am perfectly aware that it may be said the favourable results of three cases are as nothing in deciding a point of such magnitude; I admit it, but I conceive the above cases tend strongly to support the plan of Dr. Ayre and others, and strengthen the opinion of those who consider the mercurial method of treatment in this dreadful scourge and pestilence the best and most eligible.

August 29, 1832.

COLD WATER IN CHOLERA.

To the Editor of THE LANCET.

SIR,—I have been much pleased by the perusal of Dr. Hardwicke Shute's paper, detailing the important results of his treatment of the collapsed stage of malignant cholera, by the unrestrained use of cold water.

In the treatment of the patients in the cholera hospital of Wursaw, in the summer and autumn of last year, I had frequent opportunities of witnessing the distressing sufferings occasioned by a restricted use of liquids of any kind—a small cup (about two tablespoonfuls) of *salop* being all that was allowed, and that only at intervals of half an hour or an hour. The consequence was, that the thirst became almost insupportable, and the hospital continually resounded with the cry of "water"—sounds more heart-rending than even the sight of the most violent symptoms of the disease. The alleged reason of this restriction, on the part of the medical officer, being, the supposed injurious effects of distending the stomach, on the operation of the remedial agents administered, which were chiefly large doses of calomel. I then had my doubts of the propriety of depriving the unfortunate patient of what nature so urgently demanded. This opinion was subsequently confirmed, when I found that the treatment adopted at Berlin with the greatest success in the stage of collapse was cold affusion, and allowing, at the same time, the free use of cold water as a beverage. * * *

I am, Sir, yours, &c.,
CHARLES ROBERT BREE.

Ipswich, Sept. 1, 1832.

Observations on the Blood. By W. STEVENS, M.D.

Sur le Sang Humain. Par S. DENIS.

Sur le Sang. Par M. L. R. LECANU.—(Concluded.)

Experimental Inquiries in Chemical Physiology. (Part I.) On the Blood; with Remarks on the Nature, &c. of Cholera. By HORATIO PRATER, M. D.. London: Highley. 1832. 8vo. pp. 304.

SINCE the publication of our first notice of Dr. Stevens' work (page 639), another volume has appeared on the same subject, which we find to be one well worthy to receive our early attention. We accordingly add the title to our former list, and include a notice of it in the present review,

It is a book which, though by no means exempt even from material faults, displays nevertheless much patience and experimental dexterity on the part of the author, and at least proves Dr. Prater to be sufficiently competent to pronounce opinions on some of the most interesting and important of the questions involved in the speculations of Dr. Stevens;—opinions which, we shall subsequently find, agree materially with those which we have already promulgated. Of this coincidence proof shall be afforded anon.

A clever contemporary, the *Dublin Medical Journal*, has also taken up the discussion, and in its number published three days after the appearance of our first review, affords its readers an exposition of Dr. Stevens' theories, in which almost precisely the same objections as our own are opposed to the Doctor's opinions.

Before proceeding further, a brief recapitulation of the chief features of Dr. Stevens' theories will be desirable, placing in juxta-position therewith the objections which we stated for their disproof; and with a view to economise our space we adopt the subjoined form:—

Theories and Opinions of Dr. Stevens.	*Comments of* The Lancet *thereon.*
1. Venous blood contains carbonic acid.	1. Admitted.
2. Carbonic acid contained in membranous vessels, and exposed to air, passes through the membrane, and is replaced by oxygen. Such are the aërial changes in respiration.	2. Considered highly probable, and the originality of the opinion awarded to Dr. Stevens.
3. *All* acids, including the carbonic, *blacken* red blood.	3. Doubted; because we have found that a current of carbonic acid does not darken dilute solutions of florid colouring matter.
4. All neutral salts, with alkaline or earthy bases, redden black blood.	4. Admitted.
5. Arterial blood, therefore, owes its scarlet colour *not to oxygen*, but to the effect of *the salts* on its colouring matter, and venous blood is black, because the agency of the salts is prevented by carbonic *acid*.	5. Denied; because we found that removing the carbonic acid by the air-pump from healthy, dark venous blood, *did not enable the salts therein contained to restore its red colour*.
6. Alleged in proof of the preceding facts, that red crassamentum immersed in distilled water becomes black, because the water deprives it of its salts, and again becomes red in a saline solution, even in an atmosphere of carbonic acid.	6. Dr. Stevens's experiments here proved to be erroneous, by our showing that even maceration in water *does not* remove the salts from the crassamentum. This we proved by the analysis of crassamentum thus treated, finding it to contain its full complement of saline matters.

Such is a fair epitome of Dr. Stevens' views, and our objections thereto. The very key-stone of Dr. Stevens' arch—that which holds the entire of his edifice together—that which, once removed, must cause the complete destruction, by its own weight, of the whole erection, consists in his opinion that healthy *venous* blood is *black*, because it contains an *acid* which prevents *the salts* from making it *red*. How do we show the fallacy of this assertion? We remove the acid by the air-pump, and find that the blood is *blacker than before*. We prove, too, that the acid is effectually separated by receiving it into lime-water. Our Dublin contemporary, we observe, goes a step further, and on re-admitting atmospheric air to this black saline blood, discovers that it forthwith again becomes florid. The experimental evidence is here complete, and overturns the whole of Dr. Stevens' theory, from the dome to the foundation. We may add, that since our review was written, we observe that Sir Charles Scudamore, in treating of the pneumatic physiology and chemistry of the blood, has described an experiment of similar import to our own, to which Dr. Prater thus alludes:—

"But though the above facts seem to show that oxygen can decidedly hasten coagulation, there is no reason at all for believing that in the gaseous form it can keep blood fluid, in how large proportion soever it may be mixed with it.

"There is another very obvious difference between the effect of oxygen (or at least air) on the blood and the strong saline solutions. The difference alluded to is the length of time taken by the former to change its colour; but no sooner are the latter added than the effect takes place. From what has been said, it is obvious that we are not inclined at present to agree with a recent opinion, which would deprive oxygen altogether of the power of reddening the blood, and transfer such power to the saline matter necessarily present in the healthy condition of the fluid in question.

"Without entering formally into all the objections that may be brought against the theory alluded to, it will perhaps be sufficient to state the following:

"In Sir C. Scudamore's sixth experiment on the blood (p. 23), by remaining under the void of the air-pump only five minutes, blood was rendered almost black in colour. In his fifth experiment it became considerably darker in colour after the short interval of six minutes and a half. Considering these experiments as they were repeated with similar results (p. 24) sufficient to establish a general principle, how, it may be asked, can the exclusion of air change the quantity of saline matter in the blood? It is equally difficult to see how carbonic acid should produce such a change of colour in this case, since the acid, if present, would surely have a tendency to fly off.

"And indeed, whether or not, it is certain that neutral or alkaline salts never could be employed as substituted for the vital gas. This remark, however, does not affect the opinion that they may be quite indispensable as auxiliaries."—*Prater*, p. 243.

We thus find several commentators, in writings published almost at the same moment of time, drawing the same conclusions against Dr. Stevens, not from the indications of "common sense" which Dr. Stevens deems so conclusive, but from direct, unquestionable, pertinent experiments. The fact of four different experimentalists, ignorant of each other's proceedings, individually observing the same things, and deriving therefrom the same conclusions, must be regarded as almost irrefragable evidence in favour of those conclusions.

We now proceed with our task, commencing at the point at which our strictures were intermitted, namely, the topic of "*the globular appearance of the blood.*" The following extract shows that the author deems that appearance to be created merely by the presence of *undissolved, or free air* (*oxygen* in the *arterial*, and *carbonic acid* in the *venous* blood):—

"I exposed a small particle of pure colouring matter, which was found on the upper surface of an albuminous, or buffy crust, but this of itself was not globular; and we have reason to believe, that neither the fibrin nor any of the other solid ingredients have a globular form, except that which is produced by the air which they contain. Pure rain water has no solid ingredients; but still when this is exposed in the solar microscope, it exhibits a globular appearance, similar to that which exists in the serum. This appearance in the water is evidently produced by innumerable particles of free air, which by some means or other are retained in the fluid, and exist separate and distinct from each other. Now, as these globules have almost exactly the same appearances with those in the serum, and as the globules in the water are evidently produced by the innumerable particles of free air in that fluid, *we may infer, at least for the present*, that the globules in the blood are not produced by any of the solid ingredients, but that the same cause which produces the globular appearance in the water, is also the cause of the globules in the circulating current."

This doctrine is advanced by the author altogether on the following foundation. He commences by adducing experiments with the *solar* microscope, in which he states, 1st, that he has observed that the globular appearance is "nearly as distinct" (page 63) in the *serum* as with the colouring matter. 2ndly (page 63), That after serum has been exposed for a short time to the *high heat* in the lens, the air is driven off and the globules disappear. 3dly, That common water impregnated with air presents a globular aspect.

The whole of these experiments are inconclusive, as well the proofs of the existence of *free* gases in the blood, as of these being the cause of the globular aspect, inasmuch as *the high heat of the solar microscope* would extricate and *set free* any *dissolved* air in the first place; and, secondly, would lead to the generation of *steam* globules, which would put on the same appearance. Thirdly, the experiments of Doné, Raspail, and other distinguished observers, prove that the

blood possesses this globular appearance at a temperature too low for the generation of steam. Fourthly, the diameter of the globules in warm-blooded animals is not the same, though the densities of the blood be identical.

But supposing all these objections to be groundless, the following experiment is sufficient to prove Dr. Stevens to be in error. We have found by adapting an *ordinary* microscope to a simple apparatus for exhausting air, that *blood deprived of its air still retains its globular structure.*

But Dr. Stevens, not content with invading the old opinions respecting the globules on the strength of such faulty and imperfect experiments with the *solar* microscope, goes yet a step further, and infers from them, in favour of his chain of hypotheses, that *oxygen* gas exists in a *free* or undissolved state in arterial blood! This summary mode of inference is unworthy of a scientific man. The utmost that the experiments *could* prove (even overlooking their sources of error) is, that *some* gas exists in arterial blood, &c. But Dr. Stevens does not stop here. He identifies the gas without delay, forthwith pronounces it to be *oxygen*, and thus conveniently supplies himself with an argument, which, if once admitted, would certainly work most favourably in corroboration of his doctrines. But of the existence of oxygen gas, whether in a free or dissolved state, in arterial blood, Dr. Stevens gives no proof whatever. It should be remembered, too, that the proof would not be intrinsically difficult if it could be afforded at all. Why did not Dr. Stevens sacrifice a large warm-blooded animal, receive its arterial blood, *collect* the oxygen by careful pneumatic manipulation, and then rigidly examine into the identifying and peculiar properties of the gas obtained? With less accurate proof than this, science cannot be satisfied, and without such testimony must this portion, too, of the new fabric sink to the earth.

The two succeeding sections of the volume, namely, that on the "latent power of attraction," and that on the "*modus operandi* of agents on the living body," do not require any special comment. The author labours hard in the second to disprove the opinion that the mode of action of poisons, medicines, &c. is by an impression first made on the sentient extremities of the nerves. The subject, however, is so much more impartially discussed in Dr. Christison's admirable book, that we must recommend our readers not to be satisfied with Dr. Stevens' arguments without consulting Dr. Christison's also. In the chapter on "Attraction," Dr. Stevens endeavours, and we think successfully, to vindicate the originality of some of his peculiar opinions.

Before leaving this department of the volume, we deem it necessary to notice a statement of the author which perplexes us not a little, and which we refer to here, only for its singularity, inasmuch as it is altogether unconnected with the knot of theories which we are endeavouring to unravel.

At page 57, Dr. Stevens, in describing an experiment on a rabbit, says—

"A rabbit, apparently about six months old, was killed, by completely destroying the structure of the brain with a sharp bodkin. The chest was opened about fifteen minutes after death. The lungs collapsed as usual on exposure to the air. Both sides of the heart appeared to be gorged with black blood; the coronary vessels were beautifully injected; but on its first exposure to the air, there was not the slightest motion in any of the fibres; and the heart appeared to be completely dead. The pericardium was removed, and *in about two minutes after, one of the superficial branches of the coronary arteries, on the right ventricle, commenced to contract, and acted with force until it had propelled the whole of its contents into the substance of the ventricle; the artery then ceased to act, but only when it was empty of blood.*"

Bearing in mind the myriads of experiments which have been instituted for the express purpose of ascertaining whether or not arteries possess a muscular tunic; recollecting how the arteries of animals, living and dead, have been scraped, and pinched, and galvanized, and acidulated, for the purpose of irritating them to movement; reflecting on the closeness with which they have been watched, under circumstances precisely parallel to those described in the preceding experiment; and, lastly, thinking of the fact, that not one of the eager controversialists engaged in this discussion ever had the good luck to obtain even a glimpse of such a contraction as fell beneath the observation of Dr. Stevens,—remembering all these things, we can only say, that this single discovery, *if corroborated*, will do

more to perpetuate the author's fame than nine-tenths of the hypotheses now under investigation.

We now approach the division of the work in which Dr. Stevens' theories are brought to bear on the nature and treatment of disease. The section is entitled "General Observations on Fever," and extends through 190 pages of the book. In our notice thereof we shall carefully eschew all matters irrelevant to the peculiar nature of the work.

The first prominent position of the author is, that there are two classes of fevers, one produced by poisons, another not. At page 175 he then observes,

"We shall afterwards see that in those fevers that are produced by the aërial poisons, the blood is vitiated, even before the attack, and this, in the essential fevers, is decidedly the first link in the morbid chain. When we inject a putrid fluid into a vein, we derange the blood, and this vitiated blood produces all the symptoms of putrid fever. Or when we inject a weak solution of tartarised antimony into a vein, this acts as a poison in the blood, and produces, for a time, all the phenomena that occur in the first stage of those fevers that are produced by the aërial poisons. And from what I have seen, my belief is, that in all the fevers produced either by marsh miasms, or contagion, the diseased action of the solids is as much the effect of the diseased state of the blood, as it is in those cases where we cause fever by injecting a putrid or a poisoned fluid directly into the circulating current."

Again, with reference to the primarily diseased state of the blood in fevers, he says,

"Dr. Rush states, on the authority of Baron Humboldt, that when the yellow fever at Vera Cruz proves fatal in a few hours after the attack, the physicians of that city had endeavoured, in vain, to ascertain by dissection the cause of the death; for those parts which were supposed to be the seat of the disease 'frequently exhibited no marks of inflammation, nor of the least deviation from a healthy state.' Now, if the physicians of Vera Cruz could not discover, in such cases, the cause of death, it was merely because they looked for it only in the solids, where it did not exist. Had they examined the diseased condition of the black and saltless blood, with which the heart is invariably gorged, and had they known how impossible it is for such inert blood to stimulate the heart, or support life, they might easily have accounted for the cause of the sudden death without any reference to the condition of the solids."

At page 186, Dr. Stevens still more pointedly insists on the blood becoming changed *before* the supervention of manifest disease. Our readers will see that his assertions are as decided and peremptory as language will permit.

"Whatever the remote cause of fever may be, it is very evident that this cause must invariably exist, not only at the moment of attack, but even previous to that period. Now, in the fevers from poison, the blood is invariably diseased previous to the commencement of the cold stage. During this period there are premonitory symptoms, but these are evidently the effect of the diseased state of the vital fluid; and that these precursors of fever are not the effect of any local inflammatory disease is evident from the fact, that frequently during this period there is no pain in any of the organs, but a want of action, particularly in the extreme vessels, and consequently, a decrease of heat in the whole system."

And at page 187.

"This is particularly the case in the worst form of the African typhus, in cholera, the plague, and probably in all other varieties of malignant fever, where the blood is under the influence of an active poison, and where its vitality is diminished and its structure is injured even before the attack."

Further on the author adduces a considerable body of evidence, and many quotations, to show that the deranged state of blood has been found to exist during the prevalence of epidemic fevers, in persons who did not labour under the disease; and, again, in persons actually infected. In all these assertions, however, the author either rests his claim to confidence on mere presumption, or on the evidence of physical, not chemical, observations. It is manifest that we cannot, in matters of philosophic inquiry, be satisfied with this kind of testimony, especially where the exact sciences could have been brought to bear with facility on the subject. Precise analyses of the blood might and ought to have been performed on the specimens, too, respecting which the author speaks of physical alteration. Without this his argument is unstable, and his facts are barren of application. Moreover, we shall presently

see that in another pestilential disease, to which his "observations on fever" are applied with as much confidence as if fever itself was the subject of discussion, the primarily diseased state of blood has been completely and satisfactorily disproved by chemical evidence.

But before approaching this subject, we are bound to notice an episode of the author on scurvy, from which our readers will perhaps perceive, that "the saline theory and practice" may, under the blighting influence of indomitable speculation, be converted as readily to the destruction of mankind as, according to its warmest supporters, it is fully calculated for universal good. Our readers will remember that Dr. Stevens asserts that *all* acids blacken and derange the blood. It might be presumed that the paramount utility of *lemon-juice* in sea scurvy was rather contradictory to this opinion. But how does Dr. Stevens meet this fact? why, will our readers believe it? He flatly pronounces lemon juice to be a poison in this very disease, and lauds the efficacy of his saline treatment therein! And all this from one who admits that he never saw a case of scurvy in his life! Our readers shall peruse his own words:—

"Now that the citric acid is fortunately no longer in general use, as a preventive against scurvy, this disease has become, comparatively speaking, extremely rare; and though salted provisions be used as much as formerly on board of the vessels, still I have never seen even one case of scurvy amongst the sailors during the twenty years that I resided in the West Indies; consequently, I have had no opportunity of examining the vitiated state of the blood in this disease."

Again:—"And with respect to scurvy, it would not be difficult to prove, from the writings of Trotter and others, that this disease, which at one period was so distressing in the British navy, was frequent and fatal almost exactly in proportion to the quantity of citric acid, which was used as a preventive, and, unfortunately also, *as a cure* for the disease."

Our duty to the public would not be performed if we failed to place in juxta-position with the preceding most unwarrantable and dangerous statement, the following extract from the Report on the Millbank Penitentiary, by which our readers can judge of the degree of confidence to be reposed in Dr. Stevens' assertions respecting sea scurvy:—

"The next time I saw this disease in a very spreading degree, so as to affect the whole fleet at a period when the existence of the country depended on the fleet keeping the sea, was in the year 1801, when my Lord St. Vincent took the command of the channel fleet. A short time after we sailed and in not more than a fortnight the scurvy made its appearance and spread very rapidly through the fleet. Fresh provisions were not then supplied to it as now, nor vegetables. Being aware that lemon-juice was then in store and could be drawn for the fleet, I expressed to the commander-in-chief my great anxiety that a fresh supply should be had as fast as possible. The fleet was then blockading Brest, a cutter was dispatched to communicate the state of the health of the fleet, a supply of lemon-juice came out, and we gave it freely to those labouring under the disease, and daily mixed with water and sugar, to the whole of the crews of the ships, and continued its use during the time we were at sea which was nearly seventeen weeks, during which time the fleet had not as a fleet a single fresh meal, nor anything in the shape of an anti-scorbutic, but lemon-juice. The disease, under the use of this, totally disappeared; we returned with twenty-four sail of the line into Torbay, out of which number there must have been ten or twelve three-deckers, and I think, estimating fairly, there could not upon an average have been less than seven hundred men in each. Out of twenty-four sail of the line, there was not a single case of scurvy, and what was extraordinary, to such a state of health was that fleet brought by the use of lemon-juice, that the *Glory* had only four men on her sick-list; so that out of fifteen or sixteen thousand men, there were only sixteen subjects for the hospital, and some of the ships had not lost a man at that time."—*Dr. Baird.*

The remaining part of this section is chiefly occupied by the details of various facts which have long been familiar to the public, tending to show the salutary influence exercised by salt on the animal economy. Of this no one entertains a doubt; neither, we believe, will many be found to question the good effect which salt may produce in some states of disease; but we question whether any rational being exists who can peruse Dr. Stevens' book with attention, and note his freedom of assertion, his mode of overlooking facts, and his intolerable errors of reasoning, without acknowledging that he has done little towards

encouraging cautious practitioners to persevere in the use of saline remedies. 'Tis said that an injudicious advocate oftener injures than aids a good cause, and we are strongly disposed to think that in the present instance, Dr. Stevens has done more to prevent the employment of salt as a remedy, than the bitterest enemy of that practice could accomplish. We should perhaps here observe, that although a theory like that of Dr. Stevens may be altogether destitute of foundation, yet that *the practice which gave rise to that theory* may be good. But, on the other hand, the futility of the hypothesis will, in the minds of nine-tenths of the profession, outweigh the *practice* itself, and truth thus be sure to suffer.

But in the case before us has *the practice* triumphed in the yellow fever, of which it seems the author had ample experience? We are unable to answer. All that we know is, that his statements on this point are as flatly disputed as those respecting his treatment of cholera in the Coldbath-fields prison. The book before us gives us, on this subject, no tangible evidence beyond the papers by Dr. Stevens, which have already appeared in this journal, and which are reprinted at full length in the volume before us. Indeed, at least 100 pages of the book, or about one-fifth of its whole contents, are occupied by reprints of various papers which have already been universally circulated among the profession.

The only section remaining for us to examine, is the Appendix on Cholera. A considerable part of this consists of a letter addressed by Dr. Stevens, to a contemporary journal, written and published before the cholera reached this country, and before a single analysis of cholera-blood had been performed; yet, in this letter, the author's peculiar theories are insisted on as strenuously and pointedly as they were in the case of the yellow fever. The author, as usual, first leaps at his conclusion, and then presents us with the analytic labours of Turner, Thomson, and O'Shaughnessy, in a cavalier note of seven lines at the foot of the page, as corroborative of his own views. This, in matters of literature, is too bad.

The details of the mode of putting into practice the saline method in cholera, and the controversy regarding the honesty of the Coldbath-fields reports, occupy the remainder of the volume. We deem it unnecessary to enter into any lengthened notice of the first, because it is now proved, experimentally and analytically, that the blood does not undergo the change which Dr. Stevens presumes, until profuse evacuations have taken place. The saline practice is, therefore, independently of all theory, inapplicable to the premonitory symptoms. As for its utility in confirmed collapse, we leave to those who will be bold enough to trust to it, the grateful task of narrating their success.

When Mr. Thackrah's second edition of his work on the blood reaches us, we will return to Dr. Prater's volume.

The Anatomy and Physiology of the Organ of Hearing; with Remarks on Congenital Deafness, the Diseases of the Ear, some Imperfections of the Organ of Speech, and the proper Treatment of these several Affections. By DAVID TOD, Member of the Royal College of Surgeons. London: Longman and Co. 1832. 8vo. pp. 147.

THE work now before us contains many original views, both on the anatomy and physiology of the human ear. We shall condense and extract those parts which seem most remarkable for novelty, that such of our readers as are devoted to minute anatomical research may have an opportunity of comparing Mr. Tod's statements with the results of their own inquiry or dissection. If we refrain from expressing any opinion of our own, it is because Mr. Tod has described various structures and membranes unknown to Scarpa, Sœmmering, or the best writers on the anatomy of the ear. It is, however, but justice to say, that the author is prepared to demonstrate the existence of the new parts described by him, by numerous preparations in his possession.

After a description of the external ear and its muscles, to which latter the author has added two, Mr. Tod proceeds thus to describe the membrana tympani.

"The *membrana tympani*, which separates the external from the internal portion of the ear, is nearly of a circular form in the adult,

and of an irregular oval in the child, with its short diameter placed somewhat transversely and obliquely.

"It is composed of two laminæ or membranes, an external and an internal; of a muscle, and a number of blood-vessels, nerves, and absorbents.

"The *external lamina* is merely a continuation of the cuticle which lines the meatus externus. It is extremely thin and delicate, and can be readily demonstrated by maceration or boiling.

"The *internal lamina* is a continuation of the membrane which lines the cavity of the tympanum, called the *membrana propria tympani*. It is firmly fixed to the internal margin of the groove of the os annulare, and to the whole length of the manubrium mallei.

"The *muscle* which has been named *musculus tympani** arises from the groove of the os annulare, and from thence runs obliquely inwards like radii from a circumference towards a centre, between the external and the internal lamina, and is

"Inserted into the apex and whole length of the external surface of the manubrium, and into the surface of the processus brevis of the malleus.

"Action. To draw the parts into which it is inserted according to the direction of its fibres: those which are fixed to the manubrium draw it outwards in various directions, and those which are attached to the processus brevis draw it upwards and inwards.

"The *musculus tympani* is a beautiful semitransparent muscle, composed of a very thin and delicate fasciculus of fibres, connected to its coverings by cellular substance."

In the cavity of the tympanum, the author seems to have found a wide field for discovery, and has accordingly described and delineated several new muscles and ligaments.

"The *ossicula auditus* have the following *muscles, membranes,* and *ligaments,* attached to them.

"1. *Anterior Mallei** arises by a very small beginning from the extremity of the spinous process of the os sphenoidale, and from thence runs backwards, outwards, and upwards, along the outer surface of the eustachian tube, and through the fissura glaseri and canalis anterior, from the surface of which it receives many fibres, and is

"Inserted into the whole length of the processus gracilis, and interior surface of the head of the malleus, where there is a small eminence near the cervix.

"2. *Posterior Mallei* arises broad, thin, and fleshy, from the sulcus semilunaris and parts above it near the groove of the os annulare, and from thence passes forwards and inwards, and is

"Inserted into the posterior surface of the manubrium mallei below its processus brevis.

"3. *Internus Manubrii Mallei* arises by a very small beginning from the posterior cartilaginous extremity of the eutachian tube, and broad and fleshy from the sinus muscularis. The fleshy fibres from these origins terminate in a slender round tendon, which runs directly outwards from the sharp osseous ridge at the termination of the anterior extremity of the processus fallopii, and is

"Inserted into the inner surface of the manubrium mallei behind, but a little below its processus brevis.

"4. *Anterior Capitis Mallei* arises from that part of the outer surface of the fossa navicularis just before the head of the malleus, and from thence runs obliquely backwards and inwards about the twelfth part of an inch, and is

"Inserted into the depression in the anterior surface of the head of the malleus.

"5. *Superior Capitis Mallei* arises fleshy from that part of the superior surface of the fossa navicularis just above the head of the malleus, where it is articulated with the body of the incus, and from thence descends, and is

"Inserted tendinous into the superior and inner part of the head of the malleus, close to the margin of the articulating surface.

"6. *Obliquus Incudis Externus Posterior* arises fleshy from the external surface of the fossa navicularis just before the beginning of

* The author asserts that this muscle was discovered by Sir E. Home. Perhaps Sir Everard may have been the first to attribute to it muscular properties, but the middle membrane of the tympanum had long been known to anatomists, and described by them as fibrous. The propensity of Sir E. Home "to describe every structure as muscular, is well known, even though the fibres should be inconceivably minute, and united together by an elastic substance of the consistence of mucus." Analogy would lead us to suspect this middle membrane to be fibrous, for every structure which vibrates for the production of sound in the animal body, is of a fibrous nature.—Ed. L.

* "I have named the muscles more from their situations than their apparent actions. The names already in use are very objectionable, particularly the laxators and tensors; for the membrana tympani is always kept tense, after the os annulare becomes amalgamated with the entire bone, by the action of its own muscular fibres, which are more powerful than the combined strength of all those belonging to the cavitas tympani."

the mastoid cells, and from thence descends obliquely forwards and inwards, and is

" Inserted into the middle of the superior surface of the processus brevis incudis.

" 7. *Triangularis Incudis** arises broad and thin from a part of the sulcus semilunaris on the inner side of the posterior mallei, and from the root, and sometimes from the whole length of the posterior surface of the manubrium mallei. From these origins the fleshy fibres run in a converging manner, the posterior obliquely forwards and inwards, the superior obliquely downwards and inwards, and the anterior obliquely downwards, backwards, and inwards; and the whole are

" Inserted broad and thin into almost the whole length of the outer surface of the processus longus incudis, and the anterior surface of the cervix of the stapes.

" 8. *Stapedius Posterior* olim *Stapedius* arises fleshy from the sulcus stapedius, and from thence passes forwards, and a little upwards and outwards, in the form of a pyramid, and is

" Inserted tendinous into the depression in the posterior surface of the cervix of the stapes, and membranous into the posterior surface of the button-like process of the incus, and a small portion of its long process.

" 9. *Musculus or Structura Stapedius Inferior.*—This muscle or structure, (for I have not as yet been able to discover muscular fibres in it sufficiently clear to warrant my calling them by that name, although it looks more like muscular texture than any other,) arises broad and thin from the middle of the outer surface of the eminentia pyramidalis, and from thence extends obliquely upwards and outwards in the form of a pyramid, and is

" Inserted into the under surface of the cervix and crura of the stapes.

" There is another structure apparently muscular extending from the external surface of the fossa navicularis directly opposite to the head of the malleus and body of the incus, and fixed to those parts of the bones.

" The *membranes* are,

" A broad, thin, and very delicate membrane extending from the whole length of the outer surface of the body and short process of the incus, directly outwards to the adjoining surface of the fossa navicularis.

" A broad, thin, and very delicate membrane, which extends from the inner surface of the curved margin, which is formed by the union of the long and short processes of the incus, from the corresponding part of its button-like process, and from the superior surface of the cervix of the stapes and membrana stapedia, directly inwards to the adjoining surface of the septum tympani.

" A broad thin membrane which extends from the inner surface of the head of the malleus, and adjoining surface of the body of the incus, directly inwards to the opposite surface of the fossa navicularis.

" A broad thin membrane which extends from the surface of the internus manubrii mallei as it runs towards its insertion, obliquely upwards and outwards to the surface of the processus gracilis and cervix of the malleus.

" The *ligaments* are,

" A capsular ligament which connects the articulating surface in the head of the malleus to the corresponding surface in the body of the incus.

" A capsular ligament which connects the articulating surface of the button-like process of the incus to the corresponding surface in the head of the stapes.*

" A strong broad ligament which connects the outer surface of the processus brevis incudis at the apex to the outer surface of the fossa navicularis, close to the beginning of the mastoid cells.

" A strong broad ligament which connects the inner surface of the processus brevis incudis at the apex to the adjoining surface of the fossa navicularis.

" These two broad ligaments are each about the sixteenth part of an inch in length, and the external is situated immediately below and behind the obliquus incudis externus posterior muscle.

" These broad ligaments, with the processus gracilis, form the pivots to the various motions of the ossicula auditus.

The Motions of the Ossicula Auditus and the probable Actions of their Muscles.

" When we press the external surface of the head of the malleus directly inwards, the body and short process of the incus are also moved in the same direction, whilst the malleus appears to move as if it was suspended by the cervix like a steelyard; for while its head is pressed inwards, its manubrium and processus brevis are forced outwards, so as to cause that portion of the membrana tympani which is fixed to the former to be less concave, and that which is attached to the latter to be more convex externally. But these are not the only actions which we observe on pressing the head of the malleus inwards; for whilst we are forcing its manubrium and processus brevis outwards, we are at the same time

" * This muscle is noticed by a Dr. W. Holder in the year 1668. Vide Philosophical Transactions, vol. iii. p. 666."

" * When we dissect the cavity of the tympanum by elevating the inferior part of the os annulare, we almost invariably rupture the capsular ligament of the stapes, unless it be done with great care."

drawing the processus longus incudis and the stapes in the same direction.

"When we press the internal surface of the head of the malleus directly outwards, we force its manubrium and processus brevis directly inwards, and make the whole surface of the membrana tympani more concave externally, and at the same time force the processus longus incudis and the stapes directly inwards, so as to cause the whole surface of the base of the stapes to press upon the membrane of the fenestra ovalis.

"When we press the anterior surface of the head of the malleus backwards, its manubrium, together with the processus longus incudis and stapes, are forced forwards, so as to cause that portion of the membrana tympani which is posterior to the manubrium to be less, and the other portion anterior to it to be more concave than usual; and at the same time to cause the anterior half of the base of the stapes to make a greater pressure on the membrane of the fenestra ovalis than its posterior half.

"When we press the body of the incus downwards and forwards, we force its long process and the stapes, and also the manubrium mallei, directly backwards, and produce in the membrana tympani and fenestra ovalis actions the reverse of those stated in the preceding section.

"When we press the body of the incus directly downwards, we force the manubrium mallei inwards, and at the same time cause the inferior or straight margin of the base of the stapes to produce a greater degree of pressure upon the membrane of the fenestra ovalis than its other portion. And when we press the incus from the extremity of its long process directly upwards, we cause the semicircular margin of the base of the stapes to make the greater pressure upon the membrane of the foramen ovale.

"We also observe in every motion which the ossicula auditus make, or are capable of making, that the chorda tympani is moved along with them.

"All these motions which we have described, and have produced by violence, are performed by the muscles of the ossicula auditus. For when we draw in the natural direction of the anterior mallei forwards, and in that of the posterior mallei backwards, at one and the same time, we force the manubrium mallei and its processus brevis directly outwards, and the remaining bones follow. When the internus manubrii mallei contracts, which it does inwards, the manubrium follows it, and the motions of the incus and stapes take the same course.

"The anterior capitis mallei draws the head of the malleus forwards. The superior draws it upwards and outwards. The obliquus incudis externus posterior draws the incus and head of the stapes obliquely upwards and backwards. The triangularis incudis draws the processus longus incudis and the manubrium mallei in the direction of its fibres. The stapedius posterior draws the head of the stapes and processus longus incudis backwards and inwards; and the stapedius inferior (if muscular) draws the stapes downwards and inwards."

The account of the labyrinth and semicircular canals agrees generally with that given by authors; but Mr. Tod says, he has never been able to discover the aqueducts of Cotunnius. He closes this portion of his work with the following directions for exposing the apparatus tympani.

"Take the temporal bone of an infant or fœtus, and after injecting it, remove all the soft parts from its surface, keeping the membrana tympani entire; then introduce the point of a small scalpel between the os annulare and the petrous portion on the under surface, and separate the one gently from the other, so as to raise the two inferior thirds of the former about a quarter of an inch from the latter, and put a small piece of wood between them until the parts become quite dry. The different parts will then remain permanently *in situ*, only a little on the stretch. Again, take another temporal bone of the same age, and gradually remove the osseous shell which forms the upper part of the fossa navicularis and the inferior part of the cavitas tympani, and put the preparation aside to dry. Every texture will then appear *in situ*, and in a state of integrity. By repeating these dissections with slight alterations, every structure will be demonstrated in a variety of ways."

We shall, in a future number, notice the second part, which relates to the physiology and diseases of the ear.

THE LANCET.

London, Saturday, September 8, 1832.

A PESTILENTIAL disease of strange and overwhelming malignity has raged for nearly a year in various parts of Great Britain, and up to the period at which we write, we find that the ratio of the mortality to the total amount of cases, is not diminished, either from a decrease of intensity in the epidemic, or by the practical experience in

its treatment which our medical men have yet acquired. Despite the discoveries of specifics daily trumpeted to the world, despite the exulting statements of successes thereby atchieved, the reckless, unsparing plague still ravages some of the fairest spots of our once salubrious islands, usurping the place of our older and milder epidemics, and causing a daily amount of *sudden* mortality, more like the desolation of warfare than the progress of disease.

During the preceding week, it has been our unhappy task to witness examples of domestic distress such as should urge all men of the least humanity to rack their faculties for the devising of some means of staying the progress of this sad calamity. We have been accustomed to the typhus and dysenteries of Great Britain, we have known tents pitched for the sick on the public commons, and we will not deny that from these diseases we have witnessed full many a scene of bitter domestic woe. But aught to parallel the ruin which the existing malady creates by the sudden annihilation of family ties, we know not, nor have read of, in the progress of any other epidemic, since the cessation of the old "sweating sickness." We do not mean to deny that as yet, comparatively speaking, we have been mercifully dealt with; nevertheless, this comparative mercy but proves the innate malignity of the pest, and, even as it is there is scarcely a member of society, moving in any extended circle, who has not already felt the loss of some acquaintance, relative, or friend.

Under these circumstances we repeat, it becomes an urgent duty for us all to bestow our deep attention on the subject, and this duty is rendered still more imperative by the fact, that the fatal epidemic has already made its re-appearance for the second and third times in the various parts of the continent it first visited last summer; neither can we rationally hope that a few months or years will rid us of the causes of the malady, when we find by the latest arrivals from India, that six months have not elapsed since the garrison of Colombo, in Ceylon, was decimated by a sudden irruption of the disease.

It seems then to us, after deep reflection on the subject, that the IMPROVEMENT *in the method of treating the malignant cholera*, should be the paramount object in our future exertions. Of the remote causes of the disease we know nothing, absolutely nothing. But we confess that the chances of elucidating these causes do not seem to us to present an encouraging field for the investigator. The symptoms of cholera and its pathology, whether anatomical or chemical, are now sufficiently well known; anatomy has scrutinized every fibre and tissue of innumerable bodies, and chemistry has not been idle in the analysis of the blood and various fluids peculiar to the disease. And what is the result? The anatomical pathologist confesses that he can discover nothing; the chemist, although he has made many interesting observations, still is forced to admit that the most remarkable features of the disease remain unexplained by his experiments.

The *treatment* then being the grand object now before us, let us inquire briefly into the causes which interfere with the discovery and propagation of methods of more than ordinary value. We hear much of the success of *venous injections*, the *saline treatment* is equally extolled, the Austrian system of *ice* and *emetics* is praised with peculiar vehemence. Yet, on the other hand, we are told by numerous writers, that these remedies are altogether worthless, or positively injurious. Between such conflicting authorities, the mass of the profession is unable to decide; and thus, instead of any uniform mode of treatment, every town and village has its different system or systems, while the daily lists of mortality proclaim the general inefficacy of the whole.

Now, notwithstanding these facts, it is

not *impossible* that a *specific* for cholera has already been discovered. It is *certain*, moreover, that some of the vaunted systems are really of very great value, and it is indisputable that a proper and well-conducted investigation into the mode of treating cholera, *must* lead to the most important and salutary results. But how is this *proper investigation* to be conducted? How are we to avoid the exaggeration or knavery of the traders in specifics? How to avoid the envy of others unwilling to contribute to the fame and emoluments of some discoverer of a successful method? How are we to ensure that the proposals of any individual are carried into practice with all the minute observances which, in the proposer's mind, contribute most materially to success? And, lastly, How are we to secure the general adoption of the methods which this investigation would show to be most beneficial? We proceed to lay a plan before the public, deliberately and carefully devised, calculated, we believe, to embrace all these objects. To this we entreat the attention of our readers.

An inquiry of this kind should be instituted at the expense of the *nation*, and conducted by medical men of indisputable integrity, acknowledged ability, and ample experience of disease in general, and this disease in particular. The *clinical investigations* should be pursued in the localities where the epidemic presents itself in its worst forms.

To meet these objects, a travelling commission, consisting *at least* of three medical gentlemen, should be formed, and placed under the orders of the Government Board of Health. Their business should be to repair to the worst scenes of the epidemic at a moment's notice, and there put in practice any method of treatment directed by the Board. To afford a fair field for their investigations, the expense of the temporary experimental hospital should be defrayed from the *national* treasury.

In giving directions to the moveable commission for the institution of these clinical trials, the Government Board should not be altogether invested with a discretionary power. We must explain.—No proposal of treatment, for example, should be carried into extensive trial at the public expense until some evidence of its probable value is previously obtained. Thus the Board should not be permitted to institute a method never before tried, and merely proposed on uncertain theoretical data. Sufficient evidence should be first laid before them of the promising nature of the proposal.

The moveable commission should be in every respect the agents of the Board, and be totally deprived of any discretionary power in the treatment of the cases, ample and minute directions being in every instance given by the Board. As the proposer of a practice would probably desire to see his intentions exactly carried into effect, he should be permitted, or rather invited, to inspect the treatment of the cases, and see that everything was accurately done. The expenses of the proposer should of course be defrayed from the public treasury, should a favourable report be made on his method by the moveable commission.

As the peculiar service of the commission would expose them to constant and intense danger, provision should be made for their families in the event of their falling victims to their public labours.

In the management of any system of treatment, the cases should be visited *at least every hour*, and minute reports forthwith entered in a book, and signed by the officer in attendance. Each method of treatment should be carried into trial on from ten to fifty patients. A report should be made on the termination of each general experiment, and such report published in the medical and other public journals.

In illustration of the operation of the

preceding plan we will suppose a moveable commission already formed. The disease suddenly breaks out at Bilston, Bristol, or Plymouth. The commission is dispatched to the spot, supposing the parochial authorities to consent to the offer of Government to defray the hospital expenses. The commission having arrived, and a house of reception being in readiness, a mode of treatment is to be tried. Dr. Hardwicke Shute, of Gloucester, addresses memorials to the Central Board detailing a peculiar method which he has found *in practice* eminently successful. The commission is forthwith directed to give this practice a trial on twelve or twenty cases, and report the result. Dr. Hardwicke Shute is invited to attend, and the report of the commission (with the purport of which, previous to its publication, he should not be made acquainted) is accompanied by Dr. Shute's certificate of his practice having been fairly tried in all its details.

It is almost needless to enumerate the important benefits which the operation of such a plan would confer upon society. The moveable commission having no *private* interest whatever in the result of their inquiries, would not be exposed to the temptation of exaggerating or detracting from the success of any particular method. Professional jealousy would be completely avoided. The public would be shown the fallacy and danger of relying on inert nostrums, and be taught what they should spurn and what they should confide in. All this too would be done in the shortest possible space of time. The desultory and imperfect trials of new systems all over the country, whenever a novel or attractive remedy or system is pointed out, would be at once superseded. The all-important good of showing the best method of treatment, and securing for it the general confidence of the public and profession, would be attained; and all these advantages would be accomplished at an expense too insignificant to be taken into consideration. But even supposing the possible expenditure considerable, how insignificant is any pecuniary outlay contrasted with the advantage to be obtained! Even supposing the contingency of wealth and title to be the reward of the discovery of some proved specific, does there exist the wretch who would grudge the outlay for such deserts?

But to the preceding plan, as to all others, we must expect objections to be started. These will proceed probably from the Government, and probably from a certain portion of the public. Governments are ever averse to take the advice that is *publicly* given. The doing so is apt to be thought a confession of their own want of prescience and sagacity. But are such motives to operate when our fellow-citizens are perishing by an appalling pestilence,—when families rising in rude and merry health, are torn asunder or swept away before the setting sun,—when, in short, events are hourly occurring, such as even our profession, familiar as it is with sorrow in many shapes, has never witnessed in this hitherto favoured country?

It may be stated, too, in opposition to our views, that the Government Board of Health has too much occupation already. Were we to admit this fact to be correct, we must question the great utility of their present employment, when compared with that to which we would apply their services. What good, we ask, is there to be achieved by the collection and daily publication of columns of places and figures, if no *effectual* means be taken to diminish the abundance of each? Are the services of this most well-meaning and competent body to be restricted to the supervision of the accounts of parochial boards of health, and to the aiding the Lords of the Council in the construction of pecuniary orders? They ought to possess a nobler and more generous ambition.

It may also be objected, that teasing

claims would perpetually be made b empirics and pretenders, whether in or out of the profession, for the purpose of bringing their quackeries into greater notoriety. It is easy to meet this difficulty. Let the Privy Council give orders that no proposal be received by the Board, unless it be accompanied by the approving testimonials of two or more regularly-educated practitioners, and then this difficulty is at an end. The last difficulty which might be started, may be founded on the danger of popular clamour being excited by the mere idea of an *experimental* hospital. With respect to this, we must, in the first place, state, emphatically, that, up to this moment, all public and private practice in this disease, is strictly and exclusively *experimental*, and still more, that the populace being *now* well aware of the fact, feel and admit its necessity. They offer no objection to the trial of new remedies and systems. What they cry out against and fear most is, the possible occurrence of such events in the hospitals as have just disgraced that of Manchester. Let there be an order in council forthwith issued, threatening the utmost penalties of the law to all medical men who will dare to convert any part of deceased cholera patients to anatomical purposes within the precincts of an hospital. The body should not even be examined without the written permission of the relatives or friends of the dead. Let this order be printed and posted on the gates of every cholera-hospital, workhouse, and church-door, and we are satisfied that all clamour will cease, and that the people will receive the proffered assistance with satisfaction and gratitude. Besides, there is no necessity for any parade in conducting such a solemn inquiry. Let the use of the word "experimental" be carefully avoided in all reports and publications on the matter, and our knowledge of the people justifies us in promising that no theatre of the labours of the proposed commission will prove the scene of riot, violence, or confusion.

Deeply impressed as we are with the importance of the foregoing proposal, we urgently invite the profession and the public to give it at once their most serious and speedy attention.

Having in a previous number presented our readers with a copy of the Anatomy *Bill*, we lay before them in this LANCET a verbatim transcript of the Anatomy *Act*. The document may elicit from us some observations on another occasion.

TREATMENT OF

MALIGNANT CHOLERA.

EXTERNAL.

1. *Bleeding.*
   General.—*Arterial or venous.*
   Local.—*Cupping, leeches.*
2. Bandaging *for relief of spasms.*
3. Cold.—*Affusion, application, ice.*
4. Cautery.—Moxa, blisters, epithems.
5. Dry cupping.
6. Friction.—*Simple, medicated.*
7. Warmth.—*Air bath, vapour do., water do., sundry applications.*
8. Galvanism.—Electricity.

INTERNAL.

1. Alkaline salts.
2. Antispasmodics.
3. Astringents.
4. *Drinks.—Cold, warm, simple, medicated.*
5. Emetics.
6. Enemeta.—*Simple, medicated.*
7. Inhalation.—*Steam, simple or medicated, and gases.*
8. Purgatives.
9. Narcotics.
10. Sedatives.
11. Stimulants.
12. Tonics—*especially febrifuge t., or those used in intermittent diseases.*

Injection of saline substance by the veins.

Attention must always be paid to the periods when the remedies are used, whether during the premonitory stage, the collapse, reaction, or convalescence.

AN INVALID SUBSCRIBER TO THE LANCET.

DIPLOMA

OF THE

COLLEGE OF SURGEONS.

To the Editor of THE LANCET.

SIR,—Your last number contained rather a pathetic complaint against Mr. Andrews, for having presumed to insinuate that a pupil had passed an examination in Lincoln's-Inn-Fields, which was neither creditable to himself nor to his examiners. This *might possibly* be true, and the opinion not intended to injure the gentleman who supposed himself reflected on, though I am far from believing that it was really the case. The friends of the examinee would have done well to have avoided appealing to the justice or sympathy of your readers on the grounds of its being "too bad" to make so scurvy a return for the £22 so unwisely bestowed. I have some reason to know the party complaining, and I believe nothing to the disadvantage of his accomplishments nor to the integrity of his principles; but I really cannot accord him my commiseration for sufferings which he brought on himself, and for which he deserves no compassion. His partiality for examination will excuse me for subjecting him to one; and if he were near me, I would propound to him several inquiries, which, however well he may have responded to the queries of the court of examiners, will, I am sure, puzzle him to answer to my satisfaction or his own. I would ask him whether he seriously believes there is any value, real or presumed, attached to the college diploma, among sensible men? Whether the examination is a test, or the diploma a testimony, of ability? Whether he could not dispense with the diploma, and yet become a legally-qualified surgeon? Whether, if his good fortune destines him for either of the "services," the presidents of their medical departments would take his diploma as a proof of his fitness, without a farther examination and another inroad on his pocket? Whether he is weak enough to value his diploma and vain enough to be proud of it? Whether he thinks the London College would protect him against the rivalry of an undiplomaed practitioner in the shape of a charlatan, or a scientific man whose wit was more abundant than his money? Whether he can prove that the diploma is not an evidence ONLY of the gullability of one party and the rapacity of another? Whether young men are not awakening to a sense of the worthlessness of the diploma of the London College of Surgeons; and many of them, not having more bowels than brains, declining to waste their money on its purchase? I am, Sir, ONE

Who has not yet, nor ever intends to exemplify in this purchase of the diploma of the London College of Surgeons, THAT A FOOL AND HIS MONEY ARE SOON PARTED.

September 2, 1832.

LONDON HOSPITAL.—MR. ANDREWS.

To the Editor of THE LANCET.

SIR,—A letter which appears in THE LANCET for the 1st inst. relative to a misunderstanding stated to have taken place at the London Hospital between Mr. Andrews, one of its surgeons, and a gentleman who has lately passed his examination at the College of Surgeons, leads me to request you will give insertion to the following statements.

I passed my examination at the College the same evening as the gentleman above alluded to, as did also a third pupil of the London Hospital. I met Mr. Andrews the following morning at the hospital, when I heard him pass many remarks, in the presence of other pupils, upon our examinations; but, I unequivocally assert, I heard no remark of his that could justify the observations of "Junius," no animadversion disreputable to himself as an examiner of the College, or that could detract from the character of the gentleman in question. I have seen this gentleman since his examination, who told me that he felt sure Mr. Andrews had shown no improper feeling towards him, and that he disbelieved all report to the contrary. I remain, Sir, your obedient servant, H. J. BROWN.

21, Vine-court, Spitalfields.

* The real name and address of "Junius" were forwarded to us in authentication of his letter.—ED. L.

TO CORRESPONDENTS.

Medicus could not have offered a worse reason for the publication of his paper. The contemporary in question is continually in the habit of inserting communications which had been previously declined by us. We could point out scores of pages in the periodical mentioned by our correspondent, thus filled, and a month rarely passes without an addition being made to the stock.

Mr. J. Peele. They are *not* doing their duty, and have been told so a thousand times.

Mr. G. Jones. The party may *style* himself what he likes, but he must *practise* according to law. We never heard of the "nuts of the Grey Nicker."

An Injured Party, Worcester, must send us his name and address in confidence.

Is the signature *J. Bolus* anonymous? If not, and he will add his address, the letter shall be inserted. Otherwise the testimony is of no value.